
Career and Technical Education Content Standards

Approved in 2021-2024

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SD Career Readiness Skills for All CTE Clusters

Career Cluster	All
Course Code	n/a
Prerequisite(s)	n/a
Credit	n/a
Program of Study and Sequence	These “soft skills” are vital for all clusters and should be incorporated to all CTE courses.
Student Organization	All
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Volunteer, Work-based Learning
Industry Certifications	None
Dual Credit or Dual Enrollment	n/a
Teacher Certification	See main course standards.
Resources	

Description:

A career ready person capitalizes on personal strengths, talents, education and experiences to bring value to the workplace and the community through his / her performance, skill, diligence, ethics and responsible behavior. These career readiness standards are essential skills vital to all careers. As students progress through their program of study in CTE and academic courses teachers should seek ways to incorporate these standards into all courses to help students develop these soft skills to be college, career, and workforce ready.

The career readiness standards:

- Can be incorporated into all CTE clusters as appropriate (not a separate, standalone course)
- All standards are not required to be implemented by teachers in all courses (available to incorporate as appropriate)

Course Standards

Indicator # CRS 1 **Apply appropriate academic and technical skills**

Academic skills and technical skills complement one another. A career ready individual applies these skills in a strategic manner to accomplish workplace tasks.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 1.1 Academic Attainment • Demonstrate proficiency in academic core standards (math, English/ Language Arts, Science, Social Sciences) • Reads and comprehends written material in a variety of forms and levels of complexity. • Completes secondary courses to meet high school graduation requirements. • Assimilates and applies new learning, knowledge, and skills.	
Three Strategic Thinking	CRS 1.2 Technical Skill Attainment • Identifies the training, education, and certification requirements for entrance and advancement in a chosen occupation • Completes a career and technical education program of study. (concentrator) • Passes certification tests to qualify for licensure and/or industry certifications.	
Three Strategic Thinking	CRS 1.3 Strategic Thinking • Practices reasoning and systems-level thinking to deal with varied concepts and complexity. • Analyzes elements of a problem situation to develop solutions. • Uses acquired academic and technical skills to improve a situation or process. • Seeks to enhance knowledge and skills through ongoing professional development.	
	CRS 1.4 Safety Procedures	

Three Strategic Thinking	• Understands the importance of health, safety, human resource and environmental regulations for the classroom, lab, shop, and workplace. • Applies safety knowledge. • Uses safety equipment properly.	
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Notes:

Indicator # CRS 2 Communicate effectively and appropriately

Expressing ideas, providing instruction, informing others, sharing knowledge and providing customer service are critical in a career.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 2.1 Speaking and Listening • Asks pertinent questions to acquire or confirm information. • Demonstrates interpretation of verbal and non-verbal messages in a conversation. • Converses with diverse individuals in an all-inclusive manner to foster positive relationships. • Practices active and attentive listening skills.	
Three Strategic Thinking	CRS 2.2 Writing • Produces clear and coherent written communication in which the development, organization and style are appropriate to task, purpose and audience.	

	- Composes focused written documents such as: agendas, audio-visuals, bibliographies, drafts, emails, forms, notes, oral presentations, reports and technical documents. - Constructs a well-reasoned position, based on an openness to new information and ideas, to support a theory or validate a point of view.	
Three Strategic Thinking	CRS 2.3 Presentations - Prepares presentations to provide information for specific purposes and audiences. - Delivers presentations that sustain listeners' attention and interest. - Uses technology appropriately to effectively present information.	
Three Strategic Thinking	CRS 2.4 Professional Etiquette - Uses professional etiquette and observes social protocols when communicating. - Practices appropriate use of social media in personal and professional environments. - Uses proper word choice and tone when communicating to teachers, classmates, superiors, customers/clients and co-workers.	
Three Strategic Thinking	CRS 2.5 Customer Service - Establishes positive relationship with internal and external customers. - Identifies and addresses customers' needs and wants. - Recommends appropriate products and services. - Uses effective follow-up techniques to assure that the needs of customers/clients have been met.	

Notes:

Indicator # CRS 3 Contribute to the growth employee, employer, and community success

Career ready means more than attending to self-interest. It also means the ability to see the bigger picture of playing a role in the success of the employer and community through personal, civic and community actions.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 3.1 Personal Responsibility • Takes responsibility for individual and shared group work tasks. • Models behaviors that demonstrate reliability, dependability and commitment to the organization. • Pursues results with personal energy and drive to completion.	
Three Strategic Thinking	CRS 3.2 Meets Expectations • Arrives on time to work, class, appointments or meetings, adequately prepared and appropriately dressed. • Complies with policies, norms/culture, procedures and protocols. • Exhibits professional etiquette in all interactions.	
	CRS 3.3 Civic Responsibility and Service • Participates in leadership and teamwork opportunities available through professional organizations and community groups/boards/committees. • Engages in local government. • Demonstrates a respect for laws and regulations and those who enforce them.	

Notes:

Indicator # CRS 4 Make sense of problems and perseveres in solving them

Recognizing and solving problems is a daily requirement of nearly every American worker and entrepreneur. From small technical issues, to group dynamics, to design of overall systems, opportunities abound for the career ready individual to solve problems in the workplace.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Four	CRS 4.1 Perceptiveness • Accurately defines a problem or issue.	

Extended Thinking	• Recognizes factors, constraints, goals and relationships in a problem situation. • Identifies irregularities in processes and environments and seeks to understand their cause.	
Four Extended Thinking	CRS 4.2 Problem Solving • Presents multiple solutions to the problem based on evidence and insights. • Evaluates solutions and determines the potential value toward solving the problem. • Employs critical thinking skills independently and in teams to solve problems and make decisions.	
Three Strategic Thinking	CRS 4.3 Perseverance/ Work Ethic • Establishes and executes plans to completion even when faced with setbacks. • Requires minimal supervision to successfully complete tasks on schedule. • Prioritizes tasks to ensure progress toward stated objectives. • Presents a professional attitude and mindset in the classroom and workplace. • Adapts to change and demonstrates agility.	

Notes:

Indicator # CRS 5 Use critical thinking

Nearly all careers now require interaction with complex systems of technical components, complex dynamics of people or both. Many decisions are not simple and straightforward; rather, they require the ability to intelligently reason through and make complex decisions.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 5.1 Critical Thinking • Demonstrates the ability to reason critically and systematically. • Uses reason and logic to evaluate situations from multiple perspectives. • Critiques possible solutions using valid research, historical context and balanced judgment. • Recognizes and makes use of systems and relationships including interdependent cause-and-effect analysis and feedback.	
Four Extended Thinking	CRS 5.2 Decision Making • Conducts research, gathers input and analyzes information necessary for decision-making. • Develops and prioritizes possible solutions with supporting rationale. • Determines a course of action with the greatest perceived potential for success while considering its impact on others.	
Three Strategic Thinking	CRS 5.3 Adaptability • Demonstrates a willingness to learn new knowledge and skills. • Considers multiple and diverse points of view. • Manages multiple tasks and priorities. • Exhibits the ability to focus, prioritize, organize and handle ambiguity.	

Notes:

Indicator # CRS 6 Demonstrate innovation and creativity

The 21st century workplace requires innovation through creative thinking. Successful individuals will be expected to generate and share new ideas.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
	CRS 6.1 Creativity	

Three Strategic Thinking	• Uses information, knowledge and experience to generate original ideas and challenge assumptions. • Initiates brainstorming to generate ideas to solve problems or maximize opportunities. • Appreciates new and creative ideas of others. • Knows when to curb the creative process and begin implementation.	
Three Strategic Thinking	CRS 6.2 Innovation • Searches for new ways to improve the efficiency of existing processes. • Determines the feasibility of improvements for ideas and concepts. • Accepts and incorporates constructive criticism into proposals for innovation. • Takes informed risks to introduce innovation while understanding the limits of authority.	

Notes:

Indicator # CRS 7 Model ethical leadership and effective management

The ability to influence others relies on leadership. Today's workplace provides greater transparency and accountability where the ability to ethically lead and manage is essential.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 7.1 Leadership • Employs organizational development skills to foster positive working relationships and accomplish goals. • Enlists the support of others to accomplish a goal. • Models the positive attributes of effective leaders (e.g. self awareness, self-regulation, motivation, empathy and social skills).	

Three Strategic Thinking	CRS 7.2 Ethics • Considers the ethical implications of decisions and actions and their impact on personal reputation and credibility. • Recognizes personal and long-term workplace consequences of unethical or illegal behaviors. • Practices ethical behavior at all times and complies with code of conduct.	
Three Strategic Thinking	CRS 7.3 Management • Differentiates between leadership and management. • Determines the objectives, parameters and deadlines involved in managing a project prior to beginning work. • Develops personal management skills to function effectively and efficiently.	

Notes:

Indicator # CRS 8 Works productively in teams and demonstrate cultural competency

Teams of individuals with diverse cultural backgrounds have become the new norm of operation in the global workplace. The career ready individual is prepared to collaborate with colleagues representing various backgrounds.

Webb Level	Sub-indicator	Integrated Content
Three Strategic Thinking	CRS 8.1 Teamwork • Builds consensus within a team to accomplish results. • Contributes to team-oriented projects and assignments. • Engages team members and utilizes individual talents and skills.	
Three Strategic Thinking	CRS 8.2 Conflict Resolution • Anticipates potential sources of conflict and employs conflict resolution skills to facilitate solutions. • Disagrees with a team member without causing personal offense. • Negotiates with conflicting parties to agree on a reasonable and mutually acceptable solution.	

Three Strategic Thinking	CRS 8.3 Social and Cultural Competence • Gives and earns respect by interacting positively with people of different backgrounds, experiences and beliefs. • Uses awareness of all cultures and languages to effectively communicate with co-workers, classmates, and customers/clients.	
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Notes:

Indicator # CRS 9 Utilizes technology

The career ready individual has an understanding of how to use technology and apply it successfully in the workplace. Advances in technology require individuals to quickly learn and use many tools and applications.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 9.1 Data Gathering, Access, and Management • Uses various methods to search for valid, relevant data to complete workplace tasks. • Evaluates Internet resources for reliability and validity. • Develops and uses a consistent approach for managing data.	
Three Strategic Thinking	CRS 9.2 Tools and Applications • Uses the appropriate technology tools for conveying information, solving problems and expediting processes. • Demonstrates the technology skills needed for a chosen cluster. • Identifies the value of technology tools and applications.	
Three Strategic Thinking	CRS 9.3 Technology Ethics • Understands the ethical uses of information and technology related to privacy, intellectual property, and workplace issues. • Uses computer and internet protocols that ensure cyber security and confidentiality of private information.	

Notes:

Indicator # CRS 10 Manage personal career development

Managing a personal career includes exploration, preparation and participation. Each person is responsible for creating and maintaining their own college and career plan. Career management includes understanding and meeting the expectations for behavior and skills in the workplace.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	CRS 10.1 Planning • Identifies opportunities in one or more career pathways that aligns with personal interests and aptitudes. • Develops career goals and objectives. • Develops a personal education and career plan to meet goals and objectives.	
Three Strategic Thinking	CRS 10.2 Employment/ Education Seeking • Uses multiple resources, including personal and professional networks, to locate job and/or educational opportunities. • Researches information about a prospective employers to successfully complete an application. • Uses professional digital media to create a personal brand. • Markets self effectively to potential employers and institutions.	
Three Strategic Thinking	CRS 10.3 Resumes, Portfolios, and Interviews • Prepares a professional résumé appropriate for each situation. • Produces a record of education and work experiences, licenses, certifications and projects/products to include in a portfolio. • Presents a professional image appropriate for the job interview. • Communicates experiences, knowledge and skills identified in the résumé and portfolio when interviewing.	
	CRS 10.4 Professional Development	

Three Strategic Thinking	• Identifies opportunities for career advancement. • Uses resources to develop goals that address training, education and self-improvement issues.	
Three Strategic Thinking	CRS 10.5 Entrepreneurship • Understands the knowledge and skills required of an entrepreneur. • Describes the opportunities for entrepreneurship in a given cluster. • Weighs the opportunities, benefits and risks of entrepreneurship versus employment.	

Notes:

Foundational CTE Courses Foundational CTE courses apply across all 16 career clusters and aim to give students foundational knowledge and skills that apply to any career field they may explore or pursue in the future. In a scope and sequence of CTE courses, Foundational CTE courses are the first courses that then progress into career cluster or pathway-specific courses.

Assignment Code	Course Titles (Click on course to view standards)	Certification Requirements <i>*denotes authorizations that are no longer issued, but continue to make educators properly certified for the assignment</i>
Career Cluster Foundational Courses		
10004	Workplace Technology Skills	Any certified CTE teacher
22101	Leadership and Service	Any certified CTE teacher
22152	Employability	Any certified CTE teacher
22151	Career Exploration	All certified teachers or certified school counselor



Workplace Technology Skills

Career Cluster	Foundational Course - All Clusters
Course Code	10004
Prerequisite(s)	None
Credit	.5 or 1.0
Program of Study and Sequence	Foundational Courses are introductory courses to all 16 Career Clusters
Student Organization	All
Coordinating Work-Based Learning	None
Industry Certifications	Cisco or MOUS certification
Dual Credit or Dual Enrollment	None
Teacher Certification	Certified CTE teachers
Resources	Free Technology Tutorials at GCFGlobal ; Microsoft office tutorials ; Google Applied Digital Skills

Course Description:

The student will learn to identify the general usage of technology, software, and applications. Utilizing that knowledge, this course will cover topics such as, but not be limited to, word processing, spreadsheets, presentations, operating systems, Internet browsers, search engines, databased, preventive maintenance and security, digital literacy, netiquette and citizenship. This course expands the student's skills, knowledge and confidence in various forms of software platforms and applications (e.g. PC, Mac, Google Apps, smart phone, apps, etc.).

Program of Study Application

Workplace Technology Skills is a foundation course that is intended to precede further studies at the career cluster and career pathway levels.

Course Standards

Indicator # FT 1 Create and format word processing documents for a variety of personal and work applications

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 1.1 Modify, manipulate and format paragraphs Examples: • Apply paragraph and section shading • Use text flow options such as keeping lines together • Sort list, paragraphs, and tables • Change line spacing • Reveal the formatting
Two Skill/Concept	FT 1.2 Use tables to enhance documents Examples: • Create and modify spreadsheets in a table • Select and perform calculations in a table • Move a table
Two Skill/Concept	FT 1.3 Customize document formatting Examples: • Use the auto-text feature • Create a header or footer • Create or revise footnotes and endnotes • Create a watermark • Format the first page differently than the subsequent pages • Insert page numbers
Two Skill/Concept	FT 1.4 Create a mail merge document Examples: • Create a main document • Create a data source • Sort records to be merged • Merge main documents and data sources • Merge a document by using alternate data sources

Two Skill/Concept	FT 1.5 Create and use features of word processing software Examples: • Insert a field • Create, apply, and edit macros • Copy, rename, and delete macros • Create and modify a form control • Use text alignment features with graphics • Customize toolbars
Two Skill/Concept	FT 1.6 Format characters Examples: • Change the font, size, look of the text • Format with format painter • Insert symbols and special characters • Use AutoComplete • Highlight text • Insert the date and time
Two Skill/Concept	FT 1.7 Utilize Help features Examples: • Use the help feature to determine how to format text, format documents, and convert elements (e.g. table to text)

Indicator # FT 2 Create, manipulate and format data

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 2.1 Format a spreadsheet to enhance its appearance Examples: • Preview a spreadsheet • Change cell dimensions • Insert and delete cells • Add borders and shading to cells • Customize print jobs

	• Use the spell check feature • Use the undo and redo feature • Sort data • Create a list • Find and replace data in a spreadsheet
Two Skill/Concept	FT 2.2 Insert formulas into a spreadsheet to enhance its functionality Examples: • Use the auto sum function • Write formulas with mathematical operators • Use absolute and mixed cell references in a formula no revision needed
Two Skill/Concept	FT 2.3 Manipulate data within and between multiple spreadsheets Examples: • Move, copy, and paste data into cells • Create a workbook with multiple spreadsheets • Work and print within a range • Change worksheet names
Two Skill/Concept	FT 2.4 Create charts and graphs to represent data Examples: • Create and format a chart or graph • Delete a chart or graph • Size and resize a chart or graph to move • Change data in the cells of a chart or graph
Two Skill/Concept	FT 2.5 – Create forms and reports Examples: • Create a form in design view • Create a form in report view

Indicator # FT 3 Create and format professional presentations

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 3.1 Create a presentation using presentation tools Examples: • Plan a presentation • Create and save a presentation • View and print a presentation • Add transitions and sound effects • Prepare a presentation in the outline/slides panel • Capture video
Two Skill/Concept	FT 3.2 Modify a presentation Examples: • Edit slides • Edit video • Complete a spell check • Use the thesaurus • Organize slides
Two Skill/Concept	FT 3.3 Add visual elements to a presentation Examples: • Use the format buttons on the drawing toolbar • Display the ruler, guidelines, and grid lines • Insert images in a presentation • Add animation effects to a presentation • Embed video • Create organizational charts and diagrams • Create a table • Add sound and video
Two Skill/Concept	FT 3.4 Share and present professional presentations Examples: • Set automatic timer for slides • Exhibit presentation etiquette • Engage audience

Indicator # FT 4 Demonstrate an understanding of a file management system

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 4.1 – Use a file management system to navigate and manage files Examples: • Open a file on the desktop and save it to a network location • Show hidden files • Share a file
Three Strategic Thinking	FT 4.2 – Utilize a system's built-in search features Examples: • Employ built-in search to find specific file type

Indicator # FT 5 Manage user settings of an operating system

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	FT 5.1 – Demonstrate knowledge of features in the operating system Examples: • Change accessibility options • Change resolution of computer • Change audio settings • Change power options • Terminate a program using task manager • Use shortcut keys	Some features may look different across platforms (e.g. Mac, Windows, etc.)

Indicator # FT 6 Distinguish and apply key elements of Internet browsers and search engines

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 6.1 – Demonstrate advanced search techniques within a search engine Examples: • Utilize Boolean logic • Compare search phrases • Identify specific domain (e.g. .gov, .edu, .org) • Recognize international domains no revision needed

Two Skill/Concept	FT 6.2 – Analyze search engines Examples: • Compare various search engines • Communicate an understanding of clustering • Understand the purpose of real time • Utilize directory sites
Two Skill/Concept	FT 6.3 – Evaluate t Internet browsers Examples: • Compare features of various Internet browsers (e.g. customization, rendering speed, add-on capabilities) • Assess validity and quality of Internet browsers

Indicator # FT 7 Demonstrate an understanding of computer preventive maintenance and security

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 7.1 – Demonstrate various methods of backing up files Examples: • Create a backup file to a memory device or web based storage • Export 'Bookmarks' or 'Favorites' to external drive or web based storage
Two Skill/Concept	FT 7.2 – Conduct Internet browser maintenance Examples: • Clear the browser cache • Reset a browser to the default configuration • Add and remove extensions from a browser • Change homepage of browser
Two Skill/Concept	FT 7.3 – Explain the importance of antivirus software Examples: • List different antivirus options • Explain the importance of software and operating system updates
Two Skill/Concept	FT 7.4 – Communicate the importance of password creation and management

	Examples: • Create varied and complex passwords • Use a password manager to securely save passwords
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Indicator # FT 8 Develop digital literacy, netiquette and citizenship skills

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FT 8.1 – Demonstrate an understanding of the importance of privacy and security within relevant technological tools Examples: • Compare various computer/smartphone applications that utilize privacy and security methods • Install an appropriate and applicable firewall for Internet security
Three Strategic Thinking	FT 8.2 - Analyze the effect of technology on relationships and communication Examples: • Create a personal cyberbullying statement • Investigate present day legal cases concerning Internet crimes • Communicate an understanding of netiquette • Create a professional email • Create and communicate application of an avatar
Three Strategic Thinking	FT 8.3 - Demonstrate the complexity of safe, legal and responsible creation of digital footprints and reputations Examples: • Determine the most appropriate strategy to create a positive self-image and identity • Communicate professional methods that are advised for an appropriate digital footprint
Three Strategic Thinking	FT8.4 - Follow ethical and legal guidelines in gathering and using digital information and applications Examples: • Develop a digital code of ethics • Investigate the legal aspects of creating and citing digital information
Three Strategic Thinking	FT 8.5 Effectively decipher reliable information on the web Examples: • Evaluate Wikipedia references • Determine Reliable resources



Leadership and Service

Career Cluster	Foundational Course - All Clusters
Course Code	22101
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational Courses are introductory courses to all 16 Career Clusters
Student Organization	All
Coordinating Work-Based Learning	Field Trips, mentorships, community service
Industry Certifications	National Career Readiness Certificate
Dual Credit or Dual Enrollment	None
Teacher Certification	Certified CTE teachers
Resources	http://nylc.org/standards , ASCA National Standards

Course Description:

Students will be able to identify leadership characteristics, practice teamwork, and improve their use of soft skills while in the workplace and e community.

Program of Study Application

Leadership and Service is a foundation course that is intended to precede further studies at the career cluster and career pathway levels.

Course Standards

Indicator # LS 1 **Investigate skills for leadership in the workplace and community.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two	LS 1.1 Examine characteristics, leadership styles, and habits of leaders	

Adopted March 2021

Skill/Concept	Examples: • Develop a list of characteristics of effective and ineffective leaders • Write a biographical sketch, describing leadership characteristics, style and habits of an admirable person • Analyze personal leadership characteristics, styles, and habits	
Two Skill/Concept	LS 1.2 Demonstrate understanding of organizational structure and meeting protocol Examples: • Conduct an effective business meeting • Produce appropriate meeting reports • Lead a virtual meeting • Investigate importance of meeting protocol	
Two Skill/Concept	LS 1.3 Compare and apply strategies for management of self and teams Examples: • Perform a personal goal setting exercise • Participate in team building activities • Define roles for effective teams	
Three Strategic Thinking	LS 1.4 Demonstrate understanding of student organizations and their roles in preparing future leaders Examples: • Prepare a presentation on a student organization. • Organize a class mini chapter for a student organization. • Develop a Program of Work appropriate for a career and technical student organization. • Plan, implement and evaluate activities from an organization's program of work	

Employability

Career Cluster	Foundational Courses - Employability
Course Code	22152
Prerequisite(s)	No
Credit	.5
Program of Study and Sequence	No
Student Organization	FCCLA, FFA, HOSA, DECA, Skills USA, FBLA
Coordinating Work-Based Learning	Job shadowing, Internships
Industry Certifications	NCRC
Dual Credit or Dual Enrollment	None
Teacher Certification	Any certified CTE teacher or school counselor
Resources	SD Mylife, BLS, ONet Online

Course Description:

Employability skills are fundamental to creating an employable individual. Students must have skills and knowledge necessary to understand the factors that contribute to life-long work success. These standards are designed to provide students with foundational knowledge to promote successful transition from school to career.

Program of Study Application

Employability is a foundation course that is intended to precede further studies at the career cluster and career pathway levels.

Course Standards

Indicator # E 1 - Evaluate positive work behaviors and personal qualities		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	E 1.1 Identify personal qualities, aptitudes, skills, and values (personal and work)	
Level 2: Skill/Concept	E 1.2 Identify and demonstrate positive work qualities	
Level 3: Strategic Thinking	E 1.3 Analyze appropriate self-management skills as related to specific work environments	

Indicator # E 2 - Demonstrate skills to successfully seek and obtain employment		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	E 2.1 Identify employment opportunities	
Level 3: Strategic Thinking	E 2.2 Create professional employment documents	
Level 4: Extended Thinking	E 2.3 Demonstrate effective interview skills for employment	

Indicator # E 3 - Demonstrate effective workplace communication		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 4: Extended Thinking	E 3.1 Demonstrate effective and appropriate communication in the workplace using various methods	
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Indicator # E 4 - Explore workplace responsibilities		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	E 4.1 Research employers' rights and responsibilities	
Level 2: Skill/Concept	E 4.2 Understand employee rights and responsibilities	
Level 4: Extended Thinking	E 4.3 Display behaviors needed to maintain employment	

Indicator # E 5 - Make connections between employment options and training requirements		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	E 5.1 Develop a post high school plan aligned to individual abilities, goals and values	
Level 4: Extended Thinking	E 5.2 Apply employability concepts through experiential learning	

Career Exploration

Career Cluster	All
Course Code	22151
Prerequisite(s)	None
Recommended Credit	.5
Program of Study and Sequence	Foundation Course, cluster courses, pathway courses, capstone activity
Student Organization	All
Coordinating Work-Based Learning	Tour(s) of local businesses, post-high school options, job shadowing, informational interview, project-based learning
Industry Certifications	National Career Readiness Certificate (High School Level)
Dual Credit or Dual Enrollment	None
Teacher Certification	All certified teachers or certified school counselors
Resources	SD MyLife; SD Department of Labor; onetonline.org (O*Net); community/industry partners (Chamber of Commerce, Economic Development Corporations, Junior Achievement, professional organizations); SD Week of Work; Department of Vocational Rehabilitation Services

Course Description:

Career Exploration is an exploratory course that helps students identify their skills and interests while also providing direction towards possible career choices. This course provides an understanding of the sixteen career clusters. This course will help students create and maintain career plans through experiential learning and hands-on activities.

This course may be taught in the middle school and/or high school levels. Teachers of record may modify their implementation of the course content standards based on student developmental level.

Program of Study Application

Career Exploration is a foundation course that is intended to precede further studies at the career cluster and career pathway levels.

Course Standards

Indicator # CE 1 - Identify personal aptitudes, abilities, strengths, talents, and weaknesses		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CE 1.1 Demonstrate an understanding of self	
Level 3: Strategic Thinking	CE 1.2 Recognize the relationship between personal attributes and choosing a career	

Indicator # CE 2 - Investigate the 16 career clusters		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CE 2.1 Explore all 16 career clusters	
Level 2: Skill/Concept	CE 2.2 Identify specific careers within career clusters	

Indicator # CE 3 - Investigate the knowledge and skills associated with various careers		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CE 3.1 Research and interpret career information	
Level 2: Skill/Concept	CE 3.2 Compare and contrast characteristics of various careers	
Level 2: Skill/Concept	CE 3.3 Investigate education/training requirements for employment in various industries	

Indicator # CE 4 - Explore factors that impact success and satisfaction in careers		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 3: Strategic Thinking	CE 4.1 Formulate criteria for choosing a career, including but not limited to: wages & benefits, values & lifestyle preferences, required education, working conditions, working environment	
Level 4: Extended Thinking	CE 4.2 Investigate and make connections relevant to areas of interest	

Indicator # CE 5 - Create and then maintain a career plan		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CE 5.1 Explain the value and importance of a career plan	
Level 4: Extended Thinking	CE 5.2 Create a career plan, which includes but is not limited to: career(s)/career cluster(s) of interest, related activities and/or classes, and required training or education after high school (This may include a personal learning plan)	
Level 3: Strategic Thinking	CE 5.3 Investigate experiential learning opportunities aligned with a career plan	
Level 4: Extended Thinking	CE 5.4 Explore possible barriers to a career plan	

Entrepreneurship Experience

Career Cluster	All
Course Code	80026
Prerequisite(s)	None; Recommended: Foundational CTE Course(s)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Pathway Course – Capstone: Entrepreneurship Experience – Postsecondary Program.
Student Organization	DECA, Educator Rising, FBLA, FCCLA, FFA, HOSA, SkillsUSA
Coordinating Work-Based Learning	Student-Run Enterprise, Mentoring, Cooperative Work Experience, Project-Based Learning
Industry Certifications	May vary based on student's career interest and personal learning plan
Dual Credit or Dual Enrollment	Varies depending upon entrepreneurship experience
Teacher Certification	7-12 Certified Teachers, Certified School Counselors, Certified Administrators Best practice is to utilize an industry partner mentor for entrepreneurship knowledge and be facilitated by a certified educator.
Resources	SD Department of Education: Work-Based Learning Toolkit https://dlr.sd.gov/workforce_services/individuals/career_launch/toolkit.aspx

Course Description

Capstone: Entrepreneurship Experience provides students with the opportunity to develop the skills needed to establish a business. Through hands-on projects, students gain skills to be successful in the workplace. Students study, research and prepare a business plan that illustrates the practicality of their particular business. Both school and business mentors assist students in the process of developing a business plan. Students present this plan to a panel of community representatives and/or business leaders and are evaluated on the business plan, project portfolio and their presentation.

Program of Study Application

Capstone: Entrepreneurship Experience is a capstone experience at the secondary level.

Capstone: Entrepreneurship Experience would follow coursework in any career cluster and may precede enrollment in a postsecondary program.

Course Standards

ENT 1: Students will analyze personal aptitudes, abilities, strengths, talents, and weaknesses.

Webb Level	Sub-indicator
One Recall and Reproduction	ENT 1.1 Identify entrepreneurial career interests that align with future career goals.
Three Strategic Thinking	ENT 1.3 Compare personal attributes to career expectations.

ENT 2: Students will investigate ideas for a business to provide a product or service.

Webb Level	Sub-indicator
Two Skill/Concept	ENT 2.1 Compare and contrast various business ideas.
Three Strategic Thinking	ENT 2.2 Use knowledge and comprehension of industry standards to frame an idea to answer a challenging problem or question. ● Develop an original idea that solves a customer need and presents an appropriate level of challenge ● Personalize an existing business idea ● Use an existing business to develop an idea that will significantly expand the current business ● Select a business that aligns with the student's chosen career cluster ● Use good judgment to be certain that the business plan is appropriate for presentation to a review panel and the general public
Three Strategic Thinking	ENT 2.3 Engage in rigorous research to validate the business idea. ● Conduct primary research such as interviews, surveys, empirical observation, etc. before making a final business selection ● Investigate relevant government regulations and assess their impact on the proposed business idea ● Conduct market analysis ● Solicit feedback from relevant stakeholders to improve the business plan process and products or services ● Facilitate a focus group

ENT 3: Students will develop a comprehensive business plan proposal for a real or hypothetical company based on industry standards.

Webb Level	Sub-indicator
Two Skill/Concept	ENT 3.1 Compose a concise overview (executive summary) of the business plan that may include: ● Mission statement ● Nature, type, and location of business ● Summary of product or service's features and benefits ● Potential drawbacks of the business ● Unique aspects of the product or service

One Recall and Reproduction	ENT 3.2 Describe the service or product in detail, that may include: • Benefits to current or potential customers • Production methods • Areas in which the business would have a distinct advantage • Problems the product or service would solve
Three Strategic Thinking	ENT 3.3 Conduct a detailed market analysis which compares and contrasts the strengths and weaknesses of the business plan. • Identify competitors and customers • Analyze price point • Conduct a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) • Describe the uniqueness of the product or service, including how it differs from competitors
Three Strategic Thinking	ENT 3.4 Develop a marketing plan. • Identify and analyze the market in terms of potential customers, annual sales, and communication strategies • Gather information about target market including demographics and how to reach customers • Describe the competitive advantage, strategies for business growth, definition of distribution channels, and sales and marketing activities, including for example designing a logo, slogan, advertisements, packaging • Define demographics of target market, including for example age, income level, location, lifestyles, and occupations
Three Strategic Thinking	ENT 3.5 Develop an organizational structure, management scheme, and operational procedures. • Define qualifications and skills of key personnel • Describe how the business will operate • Determine infrastructure needs such as physical facilities and location • Ascertain necessary technology to run, operate, and manage the business
Three Strategic Thinking	ENT 3.6 Formulate financial projections to meet the requirements for funding by a lending institution, including calculating: • Projected sales of goods and/or services • Fixed and variable expenses • Loan and interest costs, if applicable
Two Skill/Concept	ENT 3.7 Create an appendix for business plan documents. • Resumes • Sales projections • Advertisements • Inventory • Cost analysis, etc.

ENT 4: Students will demonstrate effective communication to explain the business plan.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ENT 4.1 Create a short business pitch that illustrates the major concepts and benefits of the product or service.

Three Strategic Thinking	ENT 4.2 Present the business plan to relevant stakeholders utilizing appropriate visual aids. This may include: • Oral presentation • Website • Podcast • Social media promotion • Presentation to potential investors • Create a video using a digital platform • Prepare a display board or poster • Develop a product prototype
Four Extended Thinking	ENT 4.3 Defend and support the business plan. • Present the business plan to a live panel of reviewers and answer questions about the proposal

ENT 5: Students will reflect, analyze and document the learning process of the entrepreneurship experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ENT 5.1 Self-evaluate and assess the business plan. • Create a reflection from the beginning to the end of the project
One Recall and Reproduction	ENT 5.2 Articulate challenges encountered in the project and describe the outcomes.
Three Strategic Thinking	ENT 5.3 Identify future options and opportunities based on entrepreneurial experience, including: • Postsecondary Plan • Options to secure Funding and Open Business • Apprentices, internships, other career training options

Senior Experience

Career Cluster	All
Course Code	80019
Prerequisite(s)	None; Recommended: Foundational CTE Course(s)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Pathway Course – Capstone: Senior Experience – Postsecondary Program
Student Organization	DECA, Educator Rising, FBLA, FCCLA, FFA, HOSA, SkillsUSA
Coordinating Work-Based Learning	Mentoring, Job Shadow, Student-Run Enterprise, Volunteer Experience, Cooperative Work Experience, Project-Based Learning
Industry Certifications	May vary based on student's career interest and personal learning plan
Dual Credit or Dual Enrollment	Varies depending upon senior experience
Teacher Certification	7-12 Certified Teachers, Certified School Counselors, Certified Administrators Can be facilitated by a certified educator with a community partner/mentor.
Resources	Community and business/industry organizations www.SDMyLife.com South Dakota Department of Education Work-Based Learning Toolkit https://dlr.sd.gov/workforce_services/individuals/career_launch/toolkit.aspx

Course Description

Capstone: Senior Experience allows students to see the connections between what they are learning now and the application to postsecondary and careers. Students will be expected to conceive a plan of action that incorporates the following four elements: a project/product, research component, portfolio and presentation. Capstone: Senior Experience calls upon students to become an expert in their chosen topic area and showcase the skills and abilities they have gained through their high school experience. It will stretch the students' skills and prepare them for life beyond high school.

Program of Study Application

Capstone: Senior Experience is a capstone experience at the secondary level. Capstone: Senior Experience would follow coursework in any career cluster.

Course Standards

SE 1: Students will create a proposal for the senior experience related to career interests.

Webb Level	Sub-indicator
Four Extended Thinking	SE 1.1 Construct a comprehensive plan including: ● Research component, project/product, presentation, and portfolio ● Describe overall learning objective(s) that connects to career interests ● Explain how the project extends learning and skills as well as a learning stretch, demonstrating a significant level of knowledge and skills.
Three Strategic Thinking	SE 1.2 Develop a timeline for the project with realistic dates.
Four Extended Thinking	SE 1.3 Identify project resources (e.g., people, materials, funds), acquisitions, and budgeting.

SE 2: Students will analyze personal aptitudes, abilities, strengths, talents, and weaknesses.

Webb Level	Sub-indicator
Four Extended Thinking	SE 2.1 Evaluate personal attributes and connect to career interest expectations and senior experience.

SE 3: Students will create appropriate portfolio documents.

Webb Level	Sub-indicator
Three Strategic Thinking	SE 3.1 Create and develop documents that may be required for use in the career portfolio. This may include: ● Cover page ● Table of contents ● Résumé ● Cover letter ● List of references ● Letter of intent ● Reflective letter ● Experience journal ● Thank you notes ● Emails and professional correspondence ● Relevant career and schoolwork samples ● Research component with works cited ● Product documentation ● Certificates and recognitions

SE 4: Students will develop a research component relevant to senior experience projects/products.

Webb Level	Sub-indicator
Four Extended Thinking	SE 4.1 Construct a concise and clear thesis statement that: ● Supports main points ● Includes relevant research obtained from valid sources ● Provides a summative section

Two Skill/Concept	SE 4.2 Prepare a formatted citation document to accompany the research component.
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SE 5: Students will develop a project or product connected to the comprehensive plan (SE 1.1).

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SE 5.1 Demonstrate educational and personal growth through the project or product. Documentation of product or development process, such as reflection and artifacts
Two Skill/Concept	SE 5.2 Connect skills and knowledge gained throughout coursework relevant to project/product completion.

SE 6: Students will develop a presentation showcasing the comprehensive plan, project or product, and research.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SE 6.1 Utilize appropriate visual aids as part of the presentation.
Three Strategic Thinking	SE 6.2 Demonstrate public speaking skills as part of the presentation, including: - Professional Attire - Eye Contact - Volume - Gestures - Word Choice - Clarity and pronunciation - Effective presentation components, including hook, introduction of self, body of presentation, supporting details, and conclusion
Four Extended Thinking	SE 6.3 Present the senior experience to an audience. Presentation may include: - Project analysis and process - Explanation of relationships among comprehensive plan, project, or product, and research - Impact on postsecondary and career goals

Service Learning Experience

Career Cluster	All
Course Code	22104
Prerequisite(s)	None; Recommended: Foundational CTE Course(s)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Pathway Course – Capstone: Service Learning – Postsecondary Program
Student Organization	DECA, Educator Rising, FBLA, FCCLA, FFA, HOSA, SkillsUSA
Coordinating Work-Based Learning	Project-Based Learning, Volunteer Experience, Job Shadow, Mentoring, Cooperative Work Experience
Industry Certifications	May vary based on student's career interest and personal learning plan
Dual Credit or Dual Enrollment	Varies depending upon service learning experience
Teacher Certification	7-12 Certified Teachers, Certified School Counselors, Certified Administrators
Resources	SD Department of Education: Work-Based Learning Toolkit https://dlr.sd.gov/workforce_services/individuals/career_launch/toolkit.aspx

Course Description

Capstone: Service Learning applies academic and real-world skills to create meaningful youth-led experiences with community partnerships. Service learning is a teaching and learning strategy that connects academic curriculum to community need and empowers youth to become engaged in their personal, social, and working lives. Capstone: Service learning is a student-led, project-based learning experience that mutually benefits the student and community and extends beyond community service or volunteerism.

Program of Study Application

Capstone: Service Learning is a capstone experience at the secondary level. Capstone: Service Learning would follow coursework in any career cluster and may precede enrollment in a postsecondary program.

Course Standards

SLE 1: Students will analyze personal aptitudes, abilities, strengths, talents, and weaknesses.

Webb Level	Sub-indicator
Two Skill/Concept	SLE 1.1 Connect an understanding of self to career area of interest.
One Recall and Reproduction	SLE 1.2 Connect career interests and career goals to service learning.
Three Strategic Thinking	SLE 1.3 Develop communication skills. • Examples may include: contacting potential employers or funding sources, résumé, cover letter, and interview etiquette

SLE 2: Students will prepare a plan for a service learning project.

Webb Level	Sub-indicator
Three Strategic Thinking	SLE 2.1 Assess needs within the community. • Research, survey, or build partnerships within the community to assess needs • Critique communities within the area or communities of similar size to compare services offered
Two Skill/Concept	SLE 2.2 Develop meaningful and student-driven service activities. • Connect community needs to an engaging and developmentally appropriate activity
Four Extended Thinking	SLE 2.3 Hypothesize attainable outcomes that are valued by stakeholders.
Three Strategic Thinking	SLE 2.4 Collaborate with stakeholders to establish a vision and plan. • Set common goals to address community needs • Create a plan that both the student and mentor have vetted

SLE 3: Students will develop community partnerships that aid in implementation of service learning.

Webb Level	Sub-indicator
Two Skill/Concept	SLE 3.1 Identify a variety of partners. • Seek out collaborative, mutually beneficial, and respectful partnerships, and partnerships that address needs of all community stakeholders
Three Strategic Thinking	SLE 3.2 Identify and analyze different points of view to gain understanding of multiple perspectives.

SLE 4: Students will implement a service learning plan.

Webb Level	Sub-indicator
Three Strategic Thinking	SLE 4.1 Monitor progress by collecting artifacts throughout the experience.
Two Skill/Concept	SLE 4.2 Apply evidence to improve service learning project. • Collect evidence such as assessment, reflection, feedback from community and/or participants • May utilize an evaluation or feedback form to gather information

	● Use results for improvement and sustainability
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SLE 5: Students will evaluate the service learning experience through a final product or presentation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	SLE 5.1 Evaluate the quality and effectiveness of the experience. ● Consider what worked well throughout the experience and what could be done differently moving forward or in future projects ● Identify the largest impact of the experience
Four Extended Thinking	SLE 5.2 Analyze personal growth. ● Reflect upon changes in leadership qualities and self-awareness on future career plans ● Reflect upon changes in knowledge, skills and/or attitudes through a variety of verbal, written, artistic, or nonverbal activities
Four Extended Thinking	SLE 5.3 Analyze one's role as a citizen within the community and one's contributions to society. ● Differentiate between initial role and role after service learning experience ● Propose future role and involvement in service learning
Three Strategic Thinking	SLE 5.4 Present service learning results. ● Video ● Blog ● Slideshow presentation ● Portfolio ● Podcast ● Community presentation

Youth Apprenticeship

Career Cluster	All
Course Code	80020
Prerequisite(s)	None; Recommended: Foundational CTE Course(s)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Pathway Course – Capstone: Youth Apprenticeship – Postsecondary Program
Student Organization	DECA, Educator Rising, FBLA, FCCLA, FFA, HOSA, SkillsUSA
Coordinating Work-Based Learning	Youth Apprenticeship, Cooperative Work Experience, Mentoring
Industry Certifications	May vary based on student's career interest and personal learning plan
Dual Credit or Dual Enrollment	Varies depending upon youth internship
Teacher Certification	7-12 Certified Teachers, Certified School Counselors, Certified Administrators
Resources	ApprenticeshipUSA: https://www.dol.gov/general/topic/training/apprenticeship South Dakota Department of Labor and Regulation: http://dlr.sd.gov/workforce_services/individuals/training_opportunities/apprenticeship.aspx https://www.starttoday.sd.com SD Department of Education: Work-Based Learning Toolkit https://dlr.sd.gov/workforce_services/individuals/career_launch/toolkit.aspx

Course Description

Capstone: Youth Apprenticeship helps students gain work experience while earning a wage with a registered sponsor*. An apprenticeship is designed for students to acquire hands-on job skills in a specific occupational area. Their experience will be gained through a career site and classroom instruction. Students earn high school credit as well as hours towards a registered apprenticeship. At the completion of the high school apprenticeship program, students can continue their apprenticeship to earn a nationally recognized credential. Youth apprenticeship differs from an internship in that apprenticeships guarantee students receive a wage, hours towards a registered apprenticeship and the opportunity to receive a nationally recognized credential.

Program of Study Application

Capstone: Youth Apprenticeship is a capstone experience at the secondary level for students 16 and older. Capstone: Youth Apprenticeship would follow coursework in any career cluster and may precede enrollment in a postsecondary program.

*Businesses must be part of a registered apprenticeship through the U.S. Department of Labor. A list of Registered Sponsors can be found at ApprenticeshipUSA <https://oa.doleta.gov/bat.cfm>. Wages are set by business apprenticeship standards. Registered Sponsors have federally approved curriculum specific to the apprenticeship for use in the classroom. For more information, see: <https://www.starttodayd.com/> or contact your local Department of Labor and Regulation specialist.

Course Standards

YA 1: Students will analyze personal aptitudes, abilities, strengths, talents, and weaknesses.

Webb Level	Sub-indicator
Three Strategic Thinking	YA 1.1 Connect an understanding of self to a career area of interest.

YA 2 Students will apply career development skills.

Webb Level	Sub-indicator
Two Skill/Concept	YA 2.1 Exhibit positive work-based behaviors and career readiness skills (soft skills).
Four Extended Thinking	YA 2.2 Create a professional portfolio documenting apprenticeship experience, including as appropriate: ● Résumé ● Cover Letter ● References ● Letters of Recommendation ● Personality Assessments ● Reflections ● Skills Attainment ● Industry Recognized Credentials ● Panel interview or presentation ● Sharing with other students and/or administration ● Multimedia, PowerPoint, etc. ● Visual demonstrations

YA 3: Students will participate in a youth registered apprenticeship.

Webb Level	Sub-indicator
Four Extended Thinking	YA 3.1 Utilize processes and resources to acquire a registered apprenticeship.
Two Skill/Concept	YA 3.2 Perform work duties consistent with the responsibilities, work competencies, and work culture of the chosen apprenticeship field.
Three Strategic Thinking	YA 3.3 Adhere to industry norms and safety standards.

YA 4: Students will develop a postsecondary personal learning plan based on apprenticeship experiences.

Webb Level	Sub-indicator
Four Extended Thinking	YA 4.1 Analyze and reflect on apprenticeship experiences and the impact on future career goals.
Four Extended Thinking	YA 4.2 Develop the steps needed to achieve future career goals . ● Construct a timeline of goals for furthering education and preparing for the workforce ● Understand scholarship opportunities ● Consider postsecondary options for further education ● Explore training and certifications

Youth Internship

Career Cluster	All
Course Code	80018
Prerequisite(s)	None; Recommended: Foundational CTE Course(s)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Pathway Course – Capstone: Youth Internship – Postsecondary Program
Student Organization	DECA, Educator Rising, FBLA, FCCLA, FFA, HOSA, SkillsUSA
Coordinating Work-Based Learning	Internship, Cooperative Work Experience, Mentoring
Industry Certifications	May vary based on student's career interest and personal learning plan
Dual Credit or Dual Enrollment	Varies depending upon youth internship
Teacher Certification	7-12 Certified Teachers, Certified School Counselors, Certified Administrators
Resources	SD Future Workforce Finder Tool SD Department of Education: Work-Based Learning Toolkit https://dlr.sd.gov/workforce_services/individuals/career_launch/toolkit.aspx http://youth.gov/youth-topics/youth-employment/rules-and-regulations-youth-employment https://weekofwork.sd.gov

Course Description

Capstone: Youth Internship allows students the opportunity to consolidate and apply the learning from their school coursework into a meaningful and relevant on-the-job experience. An internship is an opportunity for a student to gain authentic, real-world, hands-on experience with one or more employees at a business, non-profit organization or government agency. The Internship experience is selected based on the student's chosen career cluster/pathway.

Program of Study Application

Capstone: Youth Internship is a capstone experience at the secondary level. Capstone: Youth Internship would follow coursework in any career cluster and may precede enrollment in a postsecondary program.

Course Standards

YI 1: Students will analyze personal aptitudes, abilities, strengths, talents, and weaknesses.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	YI 1.1 Connect an understanding of self to a career area of interest.

YI 2: Students will apply career development skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	YI 2.1 Exhibit positive work-based behaviors and career readiness skills (soft skills). ● Ethics, teamwork, cooperation, appropriate behaviors/communications ● Appropriate use of technology and social media ● Leadership in the workplace ● Appropriate workplace attire ● Appropriate communication (phone/text/email)
Four Extended Thinking	YI 2.2 Create a professional portfolio documenting internship experience, including as appropriate: ● Résumé ● Cover letter ● References ● Letters of recommendation ● Personality assessments ● Reflections ● Skills attainment ● Industry Recognized Credentials ● Panel interview or presentation ● Sharing with other students and/or administration ● Multimedia, PowerPoint, etc. ● Visual demonstrations

YI 3: Students will complete a youth internship.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	YI 3.1 Utilize processes and resources to acquire an internship.
Two Skill/Concept	YI 3.2 Perform daily work tasks consistent with the responsibilities and work culture of the chosen internship field.

YI 4: Students will develop a postsecondary personal learning plan based on internship experiences.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	YI 4.1 Analyze and reflect on internship experiences and the impact on future career goals.
Four Extended Thinking	YI 4.2 Develop the steps needed to achieve future career goals ● Construct a timeline of goals for furthering education and preparing for the workforce ● Understand scholarship opportunities ● Consider postsecondary options for further education

	● Explore certifications and training
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Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

MS Agriculture, Food & Natural Resources (18000)
Introduction to AFNR (18001^)
CASE Introduction to AFNR (18006)
Ag Leadership & Communications (18203^)
Independent Supervised Agriculture Experience – SAE (18248)

Pathway Courses

Food Products & Processing Systems Pathway	Plant Systems	Animal Systems Pathway	Power, Structural & Technical Systems Pathway	Natural Resources Systems Pathway	Environmental Service Systems Pathway	Agribusiness Systems Pathway
Ag Processing Technology (18302)	Fundamental Plant Science (18051)	Fundamental Animal Science (18101^)	Fundamental Ag Mechanical Technologies (18401^)	Wildlife & Fisheries (18501^)	Issues in Environmental Science (18508^)	Agribusiness Sales & Marketing (18201)
Food Science (18305)	Fundamental Horticulture (18052)	Companion Animals (18102^)	Ag Systems Technology (18402)	Natural Resources (18504^)	Natural Resources (18504^)	Agribusiness Management (18202^)
Agriculture Biotechnology (18308)	Horticulture Operations (18053)	Advanced Animal Science (18107^)	Fundamental Ag Structures Technology (18403)	Advanced Natural Resources (18502)	Advanced Natural Resources (18502)	
	Advanced Plant Science (18057)	Agriculture Biotechnology (18308)	Ag Metal Fabrications Technology (18404)		Agriculture Biotechnology (18308)	
	Agriculture Biotechnology (18308)		Advanced Ag Structures Technology (18407)			

Curriculum for Agricultural Science Education (CASE) Courses

CASE Food Science & Safety (18312)	CASE Principles of Agricultural Science – Plant (18056)	CASE Principles of Agricultural Science – Animal (18106)	CASE Agricultural Power & Technology (18405)	CASE Natural Resources & Ecology (18505)	CASE Environmental Science Issues (18507)	CASE Ag Research & Development (18204)
	CASE Animal & Plant Biotechnology (18313)	CASE Animal & Plant Biotechnology (18313)	CASE Mechanical Systems in Agriculture (18449)			

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Agriculture, Food & Natural Resources Career Cluster.

Supporting Academic Courses

Biology (03051^)
Biology - Advanced Studies (03052)
AP Biology (03056^)
Chemistry (03101^)
Organic Chemistry (03103)
AP Chemistry (03106^)
AP Environmental Science (03207)
Physics (03151^)
Geometry (02072^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)



Advanced Ag Structures

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18407
Prerequisite(s)	Fundamental Ag Structures Technology, Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Fundamental Ag Structures Technology – Advanced Ag Structures Technology – Capstone Experience
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture, Food, and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Advanced Ag Structures Technology is offered to meet more advanced needs in the agricultural structures industry, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. South Dakota continues to face a shortage of certified electricians, plumbers, contractors, and mechanics, leaving these careers in high demand. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, trigonometry, English, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, industry speakers, job shadowing and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) programs, the Ag Mechanics Career Development Event, and related Proficiency Experience or Internship Project. Each student will be expected to maintain an SAE.

Program of Study Application

Advanced Ag Structures Technology is the second pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Fundamental Ag Structures Technology is a prerequisite for Advanced Ag Structures Technology. Advanced Ag Structures Technology would be followed by a capstone experience.

Course Standards

AdS 1: Use safe practices when planning, maintaining, and constructing agricultural structures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AdS 1.1 Demonstrate safe use and knowledge of tools and equipment while constructing agricultural structures.
Three Strategic Thinking	AdS 1.2 Demonstrate understanding of tool repair and maintenance.
Three Strategic Thinking	AdS 1.3 Demonstrate workplace/worksites safety procedures and protocols.

AdS 2: Service and repair mechanical equipment and structures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AdS 2. 1 Analyze schematics to service various systems in an ag structure.

AdS 3: Utilize a structural plan that meets specifications and building codes.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AdS 3.1 Examine blueprints and local codes that identify required components of an ag structure.
Three Strategic Thinking	AdS 3.2 Design a construction plan for an agricultural structure.

AdS 4: Use plans to guide construction of agricultural structures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	AdS 4.1 Use architectural and mechanical plans to construct agricultural buildings or facilities.

AdS 5: Apply a variety of concrete and masonry concepts to various projects.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AdS 5.1 Demonstrate concrete and masonry procedures.

AdS 6: Investigate a variety of plumbing tools and products.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AdS 6.1 Identify tools and materials used for plumbing.
Three Strategic Thinking	AdS 6.2 Demonstrate various plumbing techniques.

AdS 7: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AdS 7.1 Develop soft skills to enhance employability.

AdS 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AdS 8.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AdS 8.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AdS 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AdS 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AdS 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Advanced Animal Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18107
Prerequisite(s)	Recommended: Intro to AFNR, Fundamental Animal Science
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Fundamental Animal Science – Advanced Animal Science – Ag Biotechnology – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture, Food and Natural Resources Cluster Endorsement; Animal Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Advanced Animal Science will address the advanced knowledge and skills necessary to care for and meet the needs of animals, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics covered include: animal health care practices, nutrition management, reproductive practices, medical terminology, animal classification, surgical techniques, and employability skills. Advanced Animal Science has an increased focus on the veterinary portion of animal husbandry. Utilizing appropriate equipment and technology should enhance classroom and laboratory content. Algebra, English, biology, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Livestock Evaluation Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Advanced Animal Science is the second pathway course in the Agriculture, Food and Natural Resources Program of Study, Animal Systems pathway. Advanced Animal Science is preceded by Fundamental Animal Science and is recommended to be taken prior to participation in Ag Biotechnology.

Course Standards

ADAn 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADAn 1.1 Demonstrate safe use and knowledge of tools and equipment used in animal science.
Two Skill/Concept	ADAn 1.2 Demonstrate workplace/worksite safety procedures and protocols.

ADAn 2: Select proper health care practices for animals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ADAn 2.1 Choose prevention and treatment programs for animal diseases, parasites, and disorders.
Two Skill/Concept	ADAn 2.2 Discuss how to provide biosecurity for animals, people, and facilities.

ADAn 3: Develop proper nutrition management practices to optimize animal performance.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ADAn 3.1 Assess nutritional elements as they affect animal performances.
Three Strategic Thinking	ADAn 3.2 Develop feed rations to provide for animals' nutritional needs.

ADAn 4: Select reproductive practices to optimize animal production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ADAn 4.1 Identify management practices in breeding that account for high quality animals.

ADAn 5: Articulate medical terminology as it relates to animals.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ADAn 5.1 Recognize relevant medical terminology related to animals.
Two Skill/Concept	ADAn 5.2 Apply medical terminology in the correct context.

ADAn 6: Classify, evaluate, and select animals based on anatomical and physiological characteristics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADAn 6.1 Apply principles of anatomy and physiology to uses within various animal systems.
Four Extended Thinking	ADAn 6.2 Analyze information and make connections pertaining to the interrelatedness of various body systems.

ADAn 7: Utilize principles of veterinary tools and techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ADAn 7.1 Identify veterinary tools and practices.
Four Extended Thinking	ADAn 7.2 Apply proper veterinary techniques to medical situations.

ADAn 8: Develop employability skills related to the Animal Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADAn 8.1 Develop soft skills to enhance employability.

ADAn 9: Develop employability skills related to the Animal Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADAn 9.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ADAn 9.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ADAn 9.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ADAn 9.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ADAn 9.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Advanced Natural Resources

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18502
Prerequisite(s)	Fundamental Natural Resources, Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Fundamental Natural Resources – Advanced Natural Resources – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Natural Resources & Environmental Science Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Advanced Natural Resources is designed to build upon the basic concepts learned in the Fundamental Natural Resources course. Advanced Natural Resources gives the student a deeper understanding of the decision-making processes that are involved in environmental and natural resource management and conservation, globally, regionally, and locally. Students will specifically examine issues related to natural resource use in South Dakota. Topics will include management strategies such as assessing rangeland condition, examining forest site indices, looking at the health of fisheries and wildlife and applying ecological concepts and principles to living organisms in natural resource systems, as related to sustained yield concepts. Students will be expected to understand the importance of soils and their relationship to all ecosystems. Students will be trained to assess air and water quality standards and parameters. Energy and mineral extraction industries will be examined along with looking at determining impacts on the soil, air, and water resources. Classroom and laboratory content may be enhanced by utilizing up-to-date equipment and technology, such as Geographic Information System software to map and inventory resources in real time. Biology, statistics, algebra, English, and human relation skills will be reinforced throughout the course. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and skills competitions such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program/Internship.

Program of Study Application

Advanced Natural Resources is a second pathway course in the Agriculture, Food and Natural Resources cluster, Natural Resources and Environmental Science Systems pathway. Advanced Natural Resources would follow Fundamental Natural Resources and would prepare a student to participate in a capstone experience.

Course Standards

ANR 1: Explore soil composition and soil management.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ANR 1.1 Investigate soil formations and 12 soil orders classification systems.
Three Strategic Thinking	ANR 1.2 Evaluate the role of soil management strategies and their impact on conservation.
Four Extended Thinking	ANR 1.3 Analyze soils for agricultural and homesite uses.
Four Extended Thinking	ANR 1.4 Analyze existing soil surveys to develop effective management plans.

ANR 2: Apply ecological concepts and principles to rangeland conservation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ANR 2.1 Summarize the interrelationships of rangeland management, the environment, wildlife management, and the livestock industry.
One Recall	ANR 2.2 Discuss practices used to improve rangeland quality.
Four Extended Thinking	ANR 2.3 Analyze the carrying capacity in various rangelands for both wildlife species and domestic livestock.
One Recall	ANR 2.4 Identify plants important to quality rangeland and determine rangeland condition.

ANR 3: Understand forest management practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ANR 3.1 Identify trees and classify species.
Four Extended Thinking	ANR 3.2 Discuss forestry management techniques.

ANR 4: Apply ecological concepts and principles to fisheries and wildlife in natural resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ANR 4.1 Compare and contrast wildlife and wild fish management.
Three Strategic Thinking	ANR 4.2 Differentiate among a variety of management practices used to manage wildlife populations.
Four Extended Thinking	ANR 4.3 Propose and/or execute a plan to enhance fish/wildlife habitats in South Dakota.

ANR 5: Understand air and water use, examine management practices, and develop conservation strategies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ANR 5.1 Compare and contrast between two governmental roles in regulating air and water quality.
One Recall	ANR 5.2 Define appropriate water conservation measures.
Four Extended Thinking	ANR 5.3 Analyze the way in which water and air management affect the environment and human needs.

ANR 6: Develop plans to ensure sustainable production and processing of natural resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ANR 6.1 Explain methods used to sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.).
Two Skill/Concept	ANR 6.2 Compare the various production methods of alternative energy sources, both renewable and non-renewable, and their relations to economic, environmental, and social sustainability.
Three Strategic Thinking	ANR 6.3 Evaluate methods used to extract and process minerals for economic, environmental, and social sustainability.

ANR 7: Develop employability skills related to the AFNR Cluster.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ANR 7.1: Develop soft skills to enhance employability.

ANR 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ANR 8.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ANR 8.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ANR 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ANR 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ANR 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Advanced Plant Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18057
Prerequisite(s)	Fundamental Plant Science AND/OR Fundamental Horticulture, Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Fundamental Plant Science – Advanced Plant Science – Ag Biotechnology – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Commercial Pesticide Applicator Certification, Private Pesticide Applicator Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Plant Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

The plant science industry is a large part of the economic structure in South Dakota, especially crop and forage production. Every corner of South Dakota is involved in the plant science field. In Advanced Plant Science, students develop the necessary knowledge, skills, habits, and attitudes for both entry-level employment and advancement within agronomy and related plant science occupations. Topics include plant anatomy, physiology, and classification, sustainability in agronomic operations, pest management, and employability skills. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, biology, English, and human relations skills will be reinforced in the course. Advanced Plant Science is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Agronomy Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Advanced Plant Science is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Plant Systems pathway. Advanced Plant Science is preceded by Fundamental Plant Science and would be followed by Ag Biotechnology.

Course Standards

ADPS 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADPS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this field.
Two Skill/Concept	ADPS 1.2 Demonstrate workplace/worksites safety procedures and protocols.

ADPS 2: Recognize principles of plant anatomy, classification, and physiology for the production and management of agronomic plants.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ADPS 2.1 Classify plants according to taxonomy, life cycles, and plant use.
Three Strategic Thinking	ADPS 2.2 Investigate various genetically modified plants (GMOs) and their relationship and/or impact on the industry.
Two Skill/Concept	ADPS 2.3 Apply knowledge of seed, fruit, and vegetative parts optimal for plant reproduction.

ADPS 3: Employ the principles and practices of sustainable agriculture in a plant-based operation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADPS 3.1 Incorporate the fundamentals of plant management and sustainable agriculture.
Three Strategic Thinking	ADPS 3.2 Develop an integrated fertilizer plan for specific plants or crops.
Three Strategic Thinking	ADPS 3.3 Evaluate data to manage range and pastures.
Three Strategic Thinking	ADPS 3.4 Examine growth of a plant to determine when and how a crop should be harvested and stored.
Three Strategic Thinking	ADPS 3.5 Evaluate crop and harvest success for future planning.

ADPS 4: Analyze a pest management system.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ADPS 4.1 Identify primary pests of plants and crops
One Recall	ADPS 4.2 Identify pesticides by formulation and use.
Three Strategic Thinking	ADPS 4.3 Develop integrated pest management strategies to manage pest populations.
One Recall	ADPS 4.4 Understand the safe handling, mixing and application of chemicals.

ADPS 5: Develop employability skills related to the Plant Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADPS 5.1 Develop soft skills to enhance employability.

ADPS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADPS 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ADPS 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ADPS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ADPS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ADPS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



AFNR Processing

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18302
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Food Science – AFNR Processing– Ag Biotechnology and/or capstone experience – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Food Products and Processing Pathway Endorsement; *Agriculture Education
Resources	

Course Description

AFNR Processing highlights the raw commodity and its journey to consumer-ready, value-added products. Utilizing appropriate equipment, technology, mathematics, science, and English, may enhance classroom and laboratory content and human relations skills will be reinforced in the course. Example potential topics include, but are not limited to, food processing, non-food processing including value added and byproducts of wood, fiber, and fuel. Work-based learning strategies appropriate for this course are school-based enterprises, field trips and internships. Opportunities for application of clinical and leadership skills are provided by participation in FFA through activities, conferences, and skills competitions such as Career Development Event (CDE), Leadership Development Events and Agriscience Fair Research Projects. Each student will be expected to maintain a Supervised Agricultural Experience (SAE).

Program of Study Application

Ag Processing Technology (Food and Fiber) is a second pathway course in the Agriculture, Food and Natural Resources cluster, Food Product and Processing Systems pathway. Ag Processing Technology (Food and Fiber) would follow Food Science and would prepare a student to participate in Ag Biotechnology or a capstone experience.

Course Standards

AgP 1: Understand and use safe practices

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADPS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	ADPS 1.2 Demonstrate workplace/worksite safety procedures and protocols.

AgP 2: Examine the makeup of the AFNR processing industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AgP 2.1 Investigate the evolution of the food and/or non-food processing industry.
Two Skill/Concept	AgP 2.2 Discuss how safety is addressed in the AFNR processing industry.
One Recall	AgP 2.3 Explain how regulatory agencies in AFNR Processing industries work to protect consumers.

AgP 3: Demonstrate operational procedures used in AFNR Processing industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgP 3.1 Explain regulatory procedures as they apply to AFNR processing.
Two Skill/Concept	AgP 3.2 Demonstrate worker safety procedures for AFNR processing equipment.
Two Skill/Concept	AgP 3.3 Explore advances in technology associated with AFNR processing

AgP 4: Processes for AFNR product storage, distribution, and consumption/use.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AgP 4.1 Classify processed AFNR products.
Two Skill/Concept	AgP 4.2 Characterize industry harvesting, selection and inspection techniques.
Two Skill/Concept	AgP 4.3 Explain the steps involved with producing various AFNR products.
Four Extended Thinking	AgP 4.4 Process AFNR product safely.

AgP 5: Develop employability skills related to the Food Product and Processing Systems.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgP 5.1 Develop soft skills to enhance employability.

AgP 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgP 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AgP 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AgP 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AgP 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AgP 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Ag Biotechnology

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18308
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Pathway course in Animal Systems, Food Product and Processing Systems, Plant Systems, or Natural Resources and Environmental Science Systems – Ag Biotechnology – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture, Food and Natural Resources Cluster Endorsement; Plant Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Our lives are increasingly touched by technological advances in biology from discoveries in disease and pest control to reproductive capabilities in plants and animals as well as biological benefits in environmental sciences. Agricultural biotechnology will continue to experience rapid growth in all sectors. Utilizing appropriate equipment and technology may enhance classroom and laboratory content; mathematics, English, biology, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA through activities, conferences, and skills competitions such as science-related Career Development Events, Leadership Development Events, Agriscience Fair and Proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program (SAE).

Program of Study Application

Ag Biotechnology is an upper-level pathway course in the Animal Systems, Food Product and Processing Systems, Plant Systems, and Natural Resources and Environmental Science Systems pathways in the Agriculture, Food and Natural Resources Cluster. Ag Biotechnology would follow a cluster course in any of those pathways and would precede a capstone experience.

Course Standards

AB 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	AB 1.2 Demonstrate workplace/worksite safety procedures and protocols.

AB 2: Assess factors that have influenced the evolution of biotechnology in agriculture. [National AFNR BS.01.]

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 2.1 Investigate and explain the relationships among past, current, and emerging applications of biotechnology in agriculture.
Three Strategic Thinking	AB 2.2 Evaluate the scope and implications of regulatory agencies on applications of biotechnology in agriculture and protection of public interests.
Four Extended Thinking	AB 2.3 Analyze the relationships and implications of bioethics, laws, and public perceptions on applications of biotechnology in agriculture.

AB 3: Illustrate the functions and importance of biotechnology at the cellular level.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AB 3.1 Recognize components of cells and their application to genetic improvement.
One Recall	AB 3.2 Recognize components of genetic transfer.
One Recall	AB 3.3 Illustrate the role of cell structures in genetic theory.
Two Skill/Concept	AB 3.4 Explain the role of genetics and cell structures in gene expression.

AB 4: Safely apply appropriate skills to complete tasks in a biotechnology research and development environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 4.1 Read, document, evaluate and secure accurate laboratory records of experimental protocols, observations, and results.
Three Strategic Thinking	AB 4.2 Implement standard operating procedures (SOP) for the biotechnology sector.

AB 5: Analyze the application of biotechnology to solve problems in Agriculture, Food and Natural Resources (AFNR) systems.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 5.1 Investigate biotechnology principles, techniques, and processes to enhance plant systems.
Three Strategic Thinking	AB 5.2 Investigate biotechnology principles, techniques, and processes to enhance animal systems.
Three Strategic Thinking	AB 5.3 Investigate biotechnology principles, techniques, and processes to enhance food products and processing systems.
Three Strategic Thinking	AB 5.4 Investigate biotechnology principles, techniques, and processes to enhance natural resources and environmental service systems.
Three Strategic Thinking	AB 5.5 Investigate the impact agriculture biotechnology has had on modern medicine

AB 6: Develop employability skills related to the Animal, Food Product and Processing, Plant, and Natural Resources and Environmental Science Systems.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 6.1 Investigate the impact agriculture biotechnology has had on modern medicine.

AB 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AB 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AB 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AB 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AB 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Ag Leadership and Communications

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18203
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Foundation Course – Ag Leadership and Communications – Pathway Course – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; *Agriculture Education
Resources	

Course Description

The world population is expected to increase to 9 billion by 2050. The agricultural industry will need strong leadership to guide us to provide food, fiber and fuel for this growing population. Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems. Agriculture Leadership and Communications will provide students with fundamental skills for success in agricultural careers and team environments. Students will investigate a variety of topics essential to communicating about the industry of agriculture. In addition to improving personal traits and career readiness, areas of study include interviewing, writing with or without using opinion, researching techniques, equipment and technology, and presentation of news and agricultural markets. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences and skills competitions such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program/Internship. English, Speech, and Human Relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, field trips, and internships.

Program of Study Application

Ag Leadership and Communications is a cluster course in the Agriculture, Food and Natural Resources cluster. Ag Leadership and Communications would be preceded by a foundation course and would prepare a student to take a first-level course in any of the Agriculture, Food and Natural Resources pathways.

Course Standards

ALC 1: Act as a responsible and contributing citizen and employee in the AFNR sector.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ALC 1.1 Model personal responsibility in the workplace and community.
Four Extended Thinking	ALC 1.2 Demonstrate soft skills for career success.
Two Skill/Concept	ALC 1.3 Apply appropriate academic and technical skills.

ALC 2: Apply and model teamwork and leadership skills in work groups.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ALC 2.1 Employ leadership skills to accomplish a team goal.
Three Strategic Thinking	ALC 2.2 Model proper use of parliamentary procedure.
Two Skill/Concept	ALC 2.3 Exhibit a cooperative spirit when working in a group situation.
Three Strategic Thinking	ALC 2.4 Build consensus to accomplish results while considering inclusion and diversity in the workplace and community.

ALC 3: Model integrity, ethical leadership and effective management.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ALC 3.1 Model characteristics of ethical and effective leaders in the workplace and community.
Three Strategic Thinking	ALC 3.2 Implement personal management skills to function effectively and efficiently in the workplace.
Three Strategic Thinking	ALC 3.3 Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community.

ALC 4: Communicate information relevant to agriculture clearly, effectively, and with reason.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ALC 4.1 Demonstrate basic information research skills and techniques.
Three Strategic Thinking	ALC 4.2 Evaluate communication strategies that ensure clarity, logic, purpose, and professionalism in formal or informal settings.
Four Extended Thinking	ALC 4.3 Produce clear, reasoned, and coherent written, verbal, or visual communication for formal or informal settings.

ALC 5: Use technology to enhance productivity.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ALC 5.1 Research, select, and use new technologies, tools, and applications to maximize productivity in the workplace and community.
Three Strategic Thinking	ALC 5.2 Utilize technology to advocate for AFNR and/or the FFA.
Four Extended Thinking	ALC 5.3 Evaluate personal and organizational risks of technology use and take actions to prevent or minimize risks in the workplace and community.

ALC 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ALC 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ALC 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ALC 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ALC 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ALC 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Ag Metal Fabrication Technology

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18404
Prerequisite(s)	Fundamental Ag Mechanical Technologies, Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Fundamental Ag Mechanical Technologies – Ag Metal Fabrication – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Construction Industry, or General Industry), National Career Readiness Certificate (NCRC), Certified Welder (AWS)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

The Ag Metal Fabrication Technology course provides students with advanced metal fabrication skills, which include Shielded Metal Arc Welding (SMAW), Metal Inert Gas (MIG) welding/Gas Metal Arc Welding (GMAW), oxy acetylene fuel welding, brazing and cutting, Gas Tungsten Arc Welding (GTAW)/Tungsten Inert Welding (TIG), and plasma cutting. This course will also incorporate soft skills necessary for careers in the Power, Structural, and Technical Systems career pathway. Classroom and laboratory content will be enhanced by utilizing appropriate equipment and technology. Geometry, physical science, physics, English, and human relations skills will be reinforced throughout this course. Work-based learning strategies appropriate for this course are school-based enterprises, industry speakers, job shadowing and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and Career Development Events. Each student will be expected to maintain a Supervised Agricultural Experience (SAE).

Program of Study Application

Ag Metal Fabrication is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Ag Metal Fabrication is preceded by Fundamental Ag Mechanical Technologies and would be followed by a capstone experience.

Course Standards

AMF 1: Apply safety practices in metal fabrication.

Webb Level	Sub-indicator
Three Strategic Thinking	AMF 1.1 – Demonstrate safe operation and knowledge of metal fabrication tools and equipment.
Three Strategic Thinking	AMF 1.2 - Demonstrate workplace/worksite safety procedures and protocols.

AMF 2: Demonstrate the basics of metal fabrication.

Webb Level	Sub-indicator
Two Skill/Concept	AMF 2.1 Demonstrate knowledge of metal fabrication techniques and related technologies.
Two Skill/Concept	AMF 2.2 Prepare various metals for welding.
Three Strategic Thinking	AMF 2.3 Create plans for a metal project.
Four Extended Thinking	AMF 2.4 Create a metal fabrication project.

AMF 3: Demonstrate the principles of Shielded Metal Arc Welding (SMAW) and the correct operation of SMAW equipment.

Webb Level	Sub-indicator
Two Skill/Concept	AMF 3.1 Perform Shielded Metal Arc Welding (SMAW) techniques.

AMF 4: Demonstrate the principles of Metal Inert Gas (MIG) welding, also known as Gas Metal Arc Welding (GMAW), and the correct operation of MIG equipment.

Webb Level	Sub-indicator
Two Skill/Concept	AMF 4.1 Perform metal inert gas (MIG) welding techniques.

AMF 5: Understand the correct operation of oxyacetylene equipment.

Webb Level	Sub-indicator
Two Skill/Concept	AMF 5.1 Explore oxyacetylene welding, cutting, and brazing.

AMF 6: Explore advanced welding processes.

Webb Level	Sub-indicator
Two Skill/Concept	AMF 6.1 Investigate and explain principles of advanced welding processes (e.g. Tungsten Inert Gas (TIG) welding, plasma cutting (hand or table))

AMF 7: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AMF 7.1– Develop soft skills to enhance employability.
Two Skill/Concept	AMF 7.2 - Investigate careers related to metal fabrication.

AMF 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AMF 8.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AMF 8.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AMF 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AMF 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AMF 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Ag Systems Technology

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18402
Prerequisite(s)	Fundamental Ag Mechanical Technologies, Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Fundamental Ag Mechanical Technologies – Ag Systems Technology – Capstone Experience
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Technically trained employees are needed in many aspects of the agriculture power industry. This course addresses the technical and industrial skills and techniques related to Power, Structural, & Technical Systems within South Dakota, as well as address soft skills needed for careers in this area. Technology in agriculture is ever-changing and this course will address emerging technologies in our industry. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Mathematics, science, English, and human relations skills will be reinforced throughout the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and skills competitions such as the Ag Mechanics Career Development Event or related proficiency award areas. Each student will be expected to maintain a Supervised Agricultural Experience (SAE) program.

Program of Study Application

Ag Systems Technology is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Ag Systems Technology is preceded by Fundamental Ag Mechanical Technologies and would be followed by a capstone experience.

Course Standards

AST 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	AST 1.2 Demonstrate workplace/worksite safety procedures and protocols.

AST 2: Apply engineering principles to mechanical equipment, power utilization and technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 2.1 Compare power generation from various energy sources.
Two Skill/Concept	AST 2.2 Investigate various properties of lubricants needed in ag mechanics.

AST 3: Apply principles of operation and maintenance to mechanical equipment, power utilization, and technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 3.1 Explain the importance of scheduled service routines to maintain machinery and equipment.
Two Skill/Concept	AST 3.2 Demonstrate suggested inspections on machinery and/or equipment.

AST 4: Examine principles of service and repair to mechanical and electrical equipment, power utilizations and technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AST 4.1 Evaluate internal and/or diesel combustion engines to assess needed service and repair.
Three Strategic Thinking	AST 4.2 Investigate service and repair specifications for operating systems.
Four Extended Thinking	AST 4.3 Diagnose problems associated with operating systems.
Two Skill/Concept	AST 4.4 Explore electric motor types, operation, and maintenance.

AST 5: Analyze emerging agriculture technologies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 5.1 Analyze how emerging agriculture technologies have affected AFNR industries.

AST 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 6.1 Develop soft skills to enhance employability.

AST 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AST 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AST 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AST 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AST 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AST 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Agribusiness Management

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18202
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Agribusiness Sales and Marketing – Agribusiness Management – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Registered Parliamentarian
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Agribusiness Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Agribusiness Management is a semester-length or year-long high school elective that introduces the business, management, marketing, and financial skills needed to successfully produce food, fiber, and fuel for domestic and global markets. Students will learn about the components of the agribusiness system and how they interact to deliver food to our tables. They will also learn about the key elements of a successful agribusiness enterprise: economics, financial management, marketing and sales, and government policies and regulations. Developing a business plan for an AFNR business as an authentic assessment for the end of the course is recommended. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and skills competitions such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program/Internship.

Program of Study Application

Agribusiness Management is a second pathway course in the Agriculture, Food and Natural Resources Cluster, Agribusiness Systems Pathway. Agribusiness Management would be preceded by an Agribusiness Sales and Marketing and followed by a Capstone experience.

Course Standards

AM 1: Introduce the components of agribusiness management.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AM 1.1 Explain key business types and management principles and issues for the agribusiness enterprise.
One Recall	AM 1.2 Explain an overview of the knowledge and skills needed to work effectively within the agribusiness enterprises.
Two Skill/Concept	AM 1.3 Demonstrate leadership skills to accomplish goals and objectives in an agribusiness environment.

AM 2: Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AM 2.1 Demonstrate key accounting fundamentals.
Two Skill/Concept	AM 2.2 Analyze and interpret agricultural policies in relation to their effects on the agribusiness management and agribusiness enterprises.

AM 3: Plan a marketing program utilizing various methods for sale of agricultural commodities and products.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AM 3.1 Explore strategies for the sale of agricultural commodities and products.
Four Extended Thinking	AM 3.2 Analyze budget and forecast models to determine optimal business marketing, strategies, and performances.

AM 4: Manage cash budgets, credit budgets, and credit for an AFNR business using generally accepted accounting principles (GAAP).

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AM 4.1 Develop, assess, and manage cash budgets to achieve AFNR business goals.
Three Strategic Thinking	AM 4.2 Analyze credit needs and manage credit budgets to achieve AFNR business goals.

AM 5: Develop employability skills related to the Agribusiness Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Develop	AM 5.1 Develop soft skills to enhance employability.
Three Strategic Thinking	AM 5.2 Model integrity, ethical leadership, and effective management.

AM 6 Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AM 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AM 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AM 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AM 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AM 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Agribusiness Sales and Marketing

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18201
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster course – Agribusiness Sales and Marketing – Agribusiness Management – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Registered Parliamentarian
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Agribusiness Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Agriculture businesses sell and market their products globally, regionally, and locally, leading to many related positions at these businesses. Skills related to selling and marketing products greatly enhance the success of an employee in an agribusiness operation. Agribusiness Sales and Marketing is designed to provide students with skills that focus on job preparatory skills as well as employee tasks necessary in agricultural sales and marketing occupations and the many career opportunities in the Agribusiness Systems Career Pathway. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Mathematics, English, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. Developing a business plan for an AFNR business as an authentic assessment for the end of the course is recommended. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and skills competitions such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program/Internship.

Program of Study Application

Agribusiness Sales and Marketing is a first pathway course in the Agriculture, Food and Natural Resources Cluster, Agribusiness Systems Pathway. Agribusiness Sales and Marketing would be preceded by a cluster course and followed by Agribusiness Management.

Course Standards

ASM 1: Demonstrate the skills necessary to obtain and keep gainful employment in agribusiness occupations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ASM 1.1 Use written and oral skills to seek and obtain an agricultural job.
Two Skill/Concept	ASM 1.2 Demonstrate Understanding of marketable skills to show personal growth.

ASM 2: Evaluate sales and marketing principles used to accomplish marketing objectives.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ASM 2.1 Write a marketing plan for a product based on marketing objectives.
Three Strategic Thinking	ASM 2.2 Merchandise products and services to meet the needs of a customer.

ASM 3: Use technology and documents to manage agribusiness inventory.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ASM 3.1 Apply reading comprehension, writing and math skills in inventory management.
Two Skill/Concept	ASM 3.2 Compare inventory management methods for various agribusinesses.

ASM 4: Evaluate opportunities for marketing of agricultural products throughout the world.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ASM 4.1 Locate areas of agricultural importance and determine the competitive advantage for production of agricultural products.
Three Strategic Thinking	ASM 4.2 Explore issues related to global food production and access.
Three Strategic Thinking	ASM 4.3 Investigate the process in developing international trading partners.

ASM 5: Use sales and marketing principles to accomplish AFNR business objectives (Nat #5)

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ASM 5.1 Develop soft skills to enhance employability.
Three Strategic Thinking	ASM 5.2 Model integrity, ethical leadership, and effective management.

ASM 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ASM 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ASM 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ASM 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ASM 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ASM 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Companion and Specialty Animal Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18102
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Foundation course – Cluster course – Companion Animals – Advanced Animal Science and/or Ag Biotechnology – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE), Capstone course
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Youth Humane Equine Management
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Animal Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Companion and Specialty Animal Science will address the basic knowledge and skills necessary to care for and meet the needs of companion animals, horses, specialty animals and exotics. Students will understand how to utilize appropriate equipment, learn anatomy and physiology, understand the structure of veterinary and small animal care services, and learn soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Utilizing appropriate equipment may enhance classroom and laboratory content, and technology, mathematics, English, biology, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and SAE activities such as the Livestock Evaluation Career Development Event and related Proficiency Awards. Each student will be expected to maintain a Supervised Agricultural Experience (SAE).

Program of Study Application

Companion and specialty animal science is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Animal Systems pathway. This course is preceded by a cluster course and is recommended to be taken prior to participation in Advanced Animal Science or Ag Biotechnology.

Course Standards

CA 1: Examine companion and specialty animal industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	CA 1.1 Investigate uses of companion and specialty animals.
Two Skill/Concept	CA 1.2 Define ethical standards of care for companion and specialty animals.
Two Skill/Concept	CA 1.3 Compare and contrast consumer concerns related to companion and specialty animals.

CA 2: Examine the anatomy and physiology of common companion/specialty animals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Applying	CA 2.1 Explain the functional differences in anatomy and physiology of companion animals and specialty animals.
One Recall	CA 2.2 Identify scientific names and common species-specific terminology relevant to entry level conversations of common companion and specialty animals.
Three Analyzing	CA 2.3 Differentiate between species' reproductive cycles.

CA 3: Evaluate an animal's diet to provide proper nutrition and optimal performance.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Evaluating	CA 3.1 Evaluate an animal's developmental stage and use it to comprehend differences in nutrient requirements throughout the animal's life cycle.
Three Analyzing	CA 2.2 Analyze a feed label/ration to determine whether it fulfills a given animal's nutrient requirements.

CA 4: Demonstrate techniques for optimal care of an animal.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Applying	CA 4.1 Recognize optimum performance for a given animal species according to their use.
Three Evaluating	CA 4.2 Evaluate an animal's behavior and determine a strategy to safely work with it.
Three Evaluating	CA 4.3 Examine animal housing, equipment, transport systems, and handling facilities for the safety of animals and handlers.

CA 5: Explore Opportunities in veterinary services and animal care and maintenance.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills	CA 5.1 Explore career opportunities in veterinary and animal health services.
Three Evaluating	CA 6.1 Develop soft skills to enhance employability.

CA 6: Develop employability skills related to the Animal Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Develop	CA 6.1 Develop soft skills to enhance employability.

CA 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CA 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	CA 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	CA 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	CA 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	CA 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

CA 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AdS 8.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AdS 8.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AdS 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AdS 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AdS 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Food Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18305
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster Course – Food Science – Ag Processing (Food and Fiber) - Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), ServeSafe Food Manager, ServeSafe Food Handler, State Food Safety Food Handler Card
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Food Products and Processing Pathway Endorsement; *Agriculture Education
Resources	

Course Description

The state of South Dakota is diverse in the agriculture products it produces and the value-added food products available to the consumer. Food Science is a course designed to provide students with an overview of food science, food safety, and its importance to producers and consumers. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Mathematics, science, English and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, field trips and internships. Opportunities for application of clinical and leadership skills are provided by participation in FFA through activities, conferences and skills competitions such as Career Development Event (CDE), Leadership Development Events and Agriscience Fair Research Projects. Each student will be expected to maintain a Supervised Agricultural Experience (SAE).

Program of Study Application

Food Science is a first pathway course in the Agriculture, Food and Natural Resources cluster, Food Product and Processing Systems pathway. Food Science would follow a cluster course and would prepare a student to participate in Ag Processing Technology (Food and Fiber).

Course Standards

FS 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	FS 1.2 Demonstrate workplace/worksite safety procedures and protocols.

FS 2: Examine the makeup of the food industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FS 2.1 Investigate the local, national, and global food supply chain and market. advancements in food science techniques.
Two Skill/Concept	FS 2.2 Identify government organizations, producer organizations, companies, and other stakeholders their impact on the food industry.

FS 3: Apply safety and sanitation procedures for food production.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FS 3.1 Identify origins of food borne pathogens and contaminants and effective prevention and control methods.
One Recall	FS 3.2 Describe proper safety and sanitation practices when working with food products.
Two Skill/Concept	FS 3.3 Demonstrate safe use and knowledge of tools, equipment and associated PPE.
Two Skill/Concept	FS 3.4 Apply safety and sanitation practices used in the food industry.

FS 4: Apply principles of science for producing safe, wholesome and nutritious food products.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FS 4.1 Apply fundamental chemistry to food science.
Two Skill/Concept	FS 4.2 Differentiate the makeup of food products.
Three Strategic Thinking	FS 4.3 Develop a food product that meets the standards of regulatory agencies.

FS 5: Develop employability skills related to the Food Product and Processing Systems.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FS 5.1 Develop soft skills to enhance employability.

FS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FS 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	FS 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	FS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	FS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	FS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Fundamental Ag Mechanical Technologies

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18401
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster Course – Fundamental Ag Mechanical Technologies – Ag Systems Technology or Ag Metal Fabrication – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Construction Industry or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Fundamental Ag Mechanical Technologies is offered to help students build basic knowledge and skills in the area of agricultural mechanics, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics covered in this course include: electricity, engines and ag technology. More substantial knowledge on the individual topics comes in advanced courses such as Ag Systems Technology, Ag Metal Fabrication, and Fundamental Ag Structures. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, English and human relation skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, industry speakers, job shadowing and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) programs, the Ag Mechanics Career Development Event, and related Proficiency Experience or Internship Project. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Ag Mechanical Technologies is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Fundamental Ag Mechanical Technologies is preceded by a Cluster course and is recommended to be taken prior to participation in Ag Systems Technology or Ag Metal Fabrication.

Course Standards

FAM 1: Apply safety practices in mechanical applications.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FAM 1.1 Explain the safe operation and servicing of machinery and equipment.
Three Strategic Thinking	FAM 1.2 Demonstrate safe operation and knowledge of ag mechanical tools.
Three Strategic Thinking	FAM 1.3 Demonstrate workplace/worksite safety procedures and protocols.

FAM 2: Identify maintenance procedures & schedules for mechanical equipment, power and agricultural technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FAM 2.1 Identify parts and explain functions of various mechanical systems.
Two Skill/Concept	FAM 2.2 Investigate common maintenance schedules and practices for equipment.
Three Strategic Thinking	FAM 2.3 Troubleshoot problems in mechanical systems.

FAM 3: Demonstrate basic skills in project planning and metal fabrication.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FAM 3.1 Create designs of metal projects.
Two Skill/Concept	FAM 3.2 Demonstrate basic welding principles and techniques.
Three Strategic Thinking	FAM 3.3 Employ metal fabrication principles to create a metal project.

FAM 4: Apply electrical principles in agricultural applications.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FAM 4.1 Recognize the components and functions of electrical systems.
Three Strategic Thinking	FAM 4.2 Demonstrate fundamental principles of electricity.

FAM 5: Investigate emerging agricultural technologies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FAM 5.1 Investigate new and/or existing technology in agriculture.

FAM 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FAM 6.1 Develop soft skills to enhance employability.

FAM 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FAM 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	FAM 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	FAM 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	FAM 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	FAM 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Fundamental Ag Structures Technology

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18403
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Cluster Course – Fundamental Ag Structures Technology – Advanced Ag Structures Technology- Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Construction Industry or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Fundamental Ag Structures Technology offers basic skills needed to be successful in the agricultural structures industry, such as the safe use of hand tools and power tools, drafting of structural plans, concrete and electrical fundamentals. The course will also incorporate soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. South Dakota continues to face a shortage of certified electricians, plumbers and contractors, leaving these careers in high demand. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, trigonometry, English and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, industry speakers, job shadowing and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) programs, the Ag Mechanics Career Development Event, and related Proficiency Experience or Internship Project. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Ag Structures Technology is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Fundamental Ag Structures Technology is preceded by a Cluster course and is recommended to be taken prior to participation in Advanced Ag Structures Technology.

Course Standards

AgS 1: Use safe practices associated with agriculture structures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 1.1 Demonstrate safe use and knowledge of tools and equipment when constructing agricultural structures.
Two Skill/Concept	AgS 1.2 Demonstrate workplace/worksite safety procedures and protocols.

AgS 2: Develop plans for an agriculture structure project.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AgS 2.1 Use computer skills or drafting tools to develop sketches and plans for an ag structure.

AgS 3: Examine various materials required for an agricultural structure.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 3.1 Investigate the differences in materials needed to assemble an ag structure.
Three Strategic Thinking	AgS 3.2 Demonstrate knowledge of structural materials by developing a supply list, along with cost estimates for a given project.

AgS 4: Construct an agriculture structure.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	AgS 4.1 Assemble components of a structure.
Four Extended Thinking	AgS 4.2 Create a complete agriculture structure by combining individually constructed components.

AgS 5: Demonstrate electrical principles.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 5.1 Explain basic electrical terms and principles.
Three Strategic Thinking	AgS 5.2 Use applicable instruments to demonstrate knowledge of basic electricity.
Three Strategic Thinking	AgS 5.3 Demonstrate wiring and electrical applications.

AgS 6: Analyze properties and conditions of building site prior to construction.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 6.1 Explain legal land descriptions and plat maps.
Three Strategic Thinking	AgS 6.2 Examine geographical characteristics of building site.
Two Skill/Concept	AgS 6.3 Understand and operate surveying equipment and/or GIS equipment.

AgS 7: Analyze various concrete and masonry concepts.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AgS 7.1 Identify tools and materials used in concrete and masonry projects.
Two Skill/Concept	AgS 7.2 Accurately mix concrete.

AgS 8: Explore career opportunities in agricultural structures and mechanics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 8.1 Investigate career opportunities that pertain to agricultural structures.
Two Skill/Concept	AgS 8.2 Develop soft skills to enhance employability.

AgS 9: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AgS 9.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	AgS 9.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	AgS 9.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	AgS 9.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	AgS 9.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Fundamental Animal Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18101
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Foundation course – Cluster course – Fundamental Animal Science – Advanced Animal Science - Ag Biotechnology – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agriculture or General Industry), National Career Readiness Certificate (NCRC), Beef Quality Assurance, Youth Beef Quality Assurance, Youth Beef Industry Food Safety, Youth Humane Equine Management, Youth Quality Care Assurance, 4-H Horse
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Animal Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Fundamental Animal Science will address the basic knowledge and skills necessary to care for and meet the needs of animals, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics addressed in the course include: animal anatomy and physiology, animal health, safely working with animals, animal nutrition, reproductive systems, animal performance, animal industry issues, animal products/marketing and employability. Utilizing appropriate equipment and technology should enhance classroom and laboratory content. Algebra, English, Biology and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Livestock Evaluation Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Animal Science is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Animal Systems pathway. Fundamental Animal Science is preceded by a Cluster course and is recommended to be taken prior to participation in Advanced Animal Science or Ag Biotechnology.

Course Standards

AN 1: Examine animal anatomy and physiology of domestic animals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AN 1.1 Recognize and distinguish animals by species, breed, gender or use.
Three Strategic Thinking	AN 1.2 Analyze the parts and functions of an animal's internal and external anatomy.

AN 2: Analyze animal health indicators and responses.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AN 2.1 Evaluate the essential factors that determine the health status of an animal.
Three Strategic Thinking	AN 2.2 Analyze and investigate proper response to poor animal health and the proper usage and effects of animal health products.

AN 3: Demonstrate understanding of practices that promote safe human and animal interactions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	AN 3.1 Evaluate an animal's behavior and determine a strategy to safely work with it.
Three Strategic Thinking	AN 3.2 Examine and assess animal housing, equipment, and handling facilities for the safety of animals and humans.
Two Skill/Concept	AN 3.3 Critique management practices that support environmentally sustainable animal production.

AN 4: Distinguish elements of proper animal nutrition.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AN 4.1 Compare an animal's differing nutritional needs throughout its life cycle.
Three Strategic Thinking	AN 4.2 Prepare a feed ration according to animal nutrient requirements.

AN 5: Study the reproductive system of animals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AN 5.1 Examine and compare male and female reproductive systems.
One Recall	AN 5.2 Discuss reproductive cycles and breeding techniques.
One Recall	AN 5.3 Identify essential elements of breeding soundness and readiness in males.
One Recall	AN 5.4 Define and identify elements of estrus, gestation and parturition.

AN 6 Identify factors that affect an animal's performance.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	AN 6.1 Predict genetic outcomes.
Two Skill/Concept	AN 6.2 Assess an operation to determine if an animal has reached its optimum performance level.
Two Skill/Concept	AN 6.3 Recommend management strategies for animals performing at sub optimal level.

AN 7: Examine animal industry issues.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AN 7.1 Compare and contrast consumer concerns related to animal food products.
One Recall	AN 7.2 Define common terminology related to animal welfare.
Two Skill/Concept	AN 7.3 Analyze consumer perceptions related to animal welfare.

AN 8: Develop employability skills related to the Animal Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AN 8.1 Develop soft skills to enhance employability.



Fundamental Horticulture

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18052
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Cluster Course – Fundamental Horticulture – Horticulture Operations or Advanced Plant Science - Capstone
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Commercial Pesticide Applicators Certification, Private Pesticide Applicators Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Plant Systems Cluster Endorsement; *Agriculture Education
Resources	

Course Description

Fundamental Horticulture is designed to give students a background in horticultural science and the many career opportunities in nursery, garden, turf and landscape industries. Fundamental Horticulture addresses the biology and genetics involved in production, processing, and marketing of horticulture. Quality nursery and landscape operations require skilled, educated employees. In this course, students develop the necessary knowledge and skills for both entry-level employment and advancement within the horticulture industries. Topics covered include classifying and identifying plants, physiology and propagation, pest management, understanding soil, environmental, and fertility factors affecting plant growth, various horticulture industry sectors, and employability skills. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Mathematics, biology, English and human relations skills will be reinforced in the course. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Nursery/Landscape and Floriculture Career Development Events, and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Horticulture is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Plant Systems pathway. Fundamental Horticulture is preceded by a Cluster course and would be followed by Horticulture Operations or Advanced Plant Science.

Course Standards

HORT 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 1.1 Demonstrate safe use and knowledge of tools and equipment used in horticulture.
Two Skill/Concept	HORT 1.2 Demonstrate workplace/worksites safety procedures and protocols.

HORT 2: Explain horticultural plant classifications.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	HORT 2.1 Classify and identify horticultural plants.

HORT 3: Define basic principles of plant physiology and propagation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 3.1 Explain basic principles of plant physiology and growth.
Two Skill/Concept	HORT 3.2 Demonstrate the propagation of plants by sexual and asexual methods.

HORT 4: Describe pest management in the horticultural industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	HORT 4.1 Identify principles of pest management.

HORT 5: Analyze soil, environment, and fertility properties as they affect plant growth.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 5.1 Examine soil and planting media management.
Three Strategic Thinking	HORT 5.2 Analyze information about the growing environment and its effect on plant growth.
One Recall	HORT 5.3 Identify plant nutrition practices for horticulture plants as they relate to plant growth and health.

HORT 6: Examine horticulture industry sectors.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 6.1 Explain the care and maintenance of vegetable/fruit crops.
Two Skill/Concept	HORT 6.2 Investigate the floriculture industry.
Two Skill/Concept	HORT 6.3 Investigate the nursery/landscape industry.
Two Skill/Concept	HORT 6.4 Investigate the care and management of turf grass.

HORT 7: Develop employability skills related to the Plant Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 7.1 Develop soft skills to enhance employability.

HORT 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HORT 8.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	HORT 8.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	HORT 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	HORT 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	HORT 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Fundamental Natural Resources

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18504
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster course – Fundamental Natural Resources – Advanced Natural Resources or Wildlife and Fisheries – Capstone
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Natural Resources and Environmental Service Pathway Endorsement; *Agriculture Education
Resources	

Course Description

People depend on natural resources. Regions, cultures, nations, and societies are shaped by how people use land, water, plants, and wildlife. South Dakota's natural resources – minerals, forests, ranges, wetlands, lakes, rivers, soils, along with all connected domestic and native plant and animal communities – play an important role in its economic health, including mining, agriculture, outdoor recreation, and tourism. The large and small ecosystems that make up the environment are complex. Fundamental Natural Resources provides students with an overview of the planet's natural resource systems, along with examining those resources unique to South Dakota. Students will explore and develop a basic understanding of how the systems relate to one another. Students will consider the roles people play in, and the occupations related to, managing, using, protecting, and conserving natural resources. Classroom and laboratory content should be enhanced by utilizing up to date equipment and technology, such as Geographic Information System (GIS) software. Biology, statistics, algebra, English, and human relations skills will be reinforced throughout the course. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences and skills competitions such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience (SAE) Program/Internship.

Program of Study Application

Fundamental Natural Resources is a first pathway course in the Agriculture, Food and Natural Resources cluster, Natural Resources and Environmental Science Systems pathway. Fundamental Natural Resources would follow a cluster course and would prepare a student to participate in either Advanced Natural Resources or Wildlife and Fisheries.

Course Standards

FNR 1: Examine the importance of resource and human interrelations to conduct management activities in natural habitats.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FNR 1.1 Explain resource management components to establish or enhance relationships in natural resource systems.
Two Skill/Concept	FNR 1.2 Explain GPS and GIS and how they impact natural resource management activities.
Two Skill/Concept	FNR 1.3 Examine planning data to determine natural resource status.
One Recall	FNR 1.4 Discuss safety related to weather and other criteria in an outdoor environment.
Two Skill/Concept	FNR 1.5 Investigate forestry management techniques.
Two Skill/Concept	FNR 1.6 Define and Investigate the role of ecosystem services and their impact on human society.

FNR 2: Interpret scientific principles of natural resource management activities.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FNR 2.1 Identify and classify plant- and animal-based natural resources.
Two Skill/Concept	FNR 2.2 Identify natural cycles and related phenomena to describe ecological concepts and principles.
Two Skill/Concept	FNR 2.3 Examine soil compositions, properties, and health.
Two Skill/Concept	FNR 2.4 Demonstrate techniques used to classify soils.
Two Skill/Concept	FNR 2.5 Explain the importance of soil conservation.
Three Strategic Thinking	FNR 2.6 Analyze wetland, watershed and groundwater properties, classifications and functions.

FNR 3: Describe production practices and processing procedures for natural resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FNR 3.1 Describe how natural resource products are produced, harvested, processed and used.

FNR 4: Develop employability skills related to the AFNR Cluster.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FNR 4.1: Develop soft skills to enhance employability.

FNR 5: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FNR 5.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	FNR 5.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	FNR 5.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	FNR 5.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	FNR 5.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

FNR 6: Explain responsible practices to protect natural resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	FNR 6.1 Describe techniques and equipment needed to manage and conserve natural resources.
Two Skill/Concept	FNR 6.2 Discuss animal and plant disease symptoms and prevention.
One Recall	FNR 6.3 Recognize insect types and available controls to prevent insect infestation.



Fundamental Plant Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18051
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Cluster Course – Fundamental Plant Science – Advanced Plant Science (Agronomy) or Advanced Horticulture - Capstone
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Commercial Pesticide Applicator Certification, Private Pesticide Applicator Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Plant Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

The plant science industry is a large part of the economic structure in South Dakota, from crop and forage production to horticulture and forestry. Every corner of South Dakota is involved in the plant science field. In this course, students develop the necessary knowledge, skills, habits and attitudes for both entry-level employment and advancement in areas such as production agriculture, research, and horticulture, including the soft skills necessary to be successful. Topics covered in this course include plant anatomy and physiology, environmental impacts and plant growth, production and harvesting, and employability skills. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, biology, English and human relations skills will be reinforced in the course. Fundamental Plant Science is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Agronomy Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Plant Science is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Plant Systems pathway. Fundamental Plant Science is preceded by a Cluster course and would be followed by Advanced Plant Science (Agronomy) or Advanced Horticulture.

Course Standards

PS 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	PS 1.2 Demonstrate workplace/worksite safety procedures and protocols.

PS 2: Explain principles of anatomy and physiology in plants.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PS 2.1 Describe functional differences in plant structures including roots, stems, flowers, leaves, and fruits.
One Recall	PS 2.2 Classify and identify plants.

PS 3: Manipulate the environment to promote optimal growth in plants.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 3.1 Determine nutritional requirements for optimal plant growth.
Two Skill/Concept	PS 3.2 Examine data to evaluate and manage soil/media and nutrients.

PS 4: Evaluate fundamentals of production and harvesting of plants.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 4.1 Analyze a production plan for optimal plant production.
Three Strategic Thinking	PS 4.2 Examine the basic methods for reproducing and propagating plants.
Three Strategic Thinking	PS 4.3 Examine fundamentals to harvest, handle, store, and market crops.

PS 5: Explore employability skills within the plant science industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 5.1 Develop soft skills to enhance employability.

PS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	PS 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	PS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	PS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	PS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Horticulture Operations

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18053
Prerequisite(s)	Recommended Intro to AFNR, Fundamental Plant Science AND/OR Fundamental Horticulture
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Fundamental Horticulture – Horticulture Operations – Ag Biotechnology - Capstone
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC), Private Pesticide Applicator Certification, Commercial Pesticide Applicator Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture, Food and Natural Resources Cluster Endorsement; Plant Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Horticulture Operations is designed for instructors to customize the curriculum to local industry needs. Standards can be met by utilizing one or more of the following horticulture sectors: Landscape Design, Floriculture and/or Greenhouse Management. Topics include identification, use and management of equipment and materials, as well as managing plant growth and maintaining plants and equipment. Employment skills are an additional emphasis. All three of these industry sectors require skilled, educated employees. Classroom and laboratory content will be enhanced by utilizing appropriate equipment and technology. Mathematics, (geometry), science (physical science, biology, Chemistry), English and human relations skills will be reinforced in the course. Opportunities for application of clinical and leadership skills are provided by participation in FFA through activities, conferences and skills competitions. Each student will be expected to maintain a Supervised Agricultural Experience (SAE) program.

Program of Study Application

Horticulture Operations is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Plant Systems pathway. Horticulture Operations is preceded by Fundamental Horticulture and would be followed by Ag Biotechnology.

Course Standards

ADVH 1: Understand and use safe practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADVH 1.1 Demonstrate safe use and knowledge of tools and equipment used in horticulture operations.
Two Skill/Concept	ADVH 1.2 Demonstrate workplace/worksites safety procedures and protocols.

ADVH 2: Identify plants, equipment and materials utilized in the horticulture industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADVH 2.1 Identify and categorize plants by their purpose.
Two Skill/Concept	ADVH 2.2 Identify and demonstrate proper use of tools and equipment used in horticultural industries.
One Recall	ADVH 2.3 Identify supplies and materials used in horticulture.
Four Extended Thinking	ADVH 2.4 Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.

ADVH 3: Develop and implement a horticulture management plan.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ADVH 3.1 Determine the influence of environmental and nutritional factors on plants.
Four Extended Thinking	ADVH 3.2 Apply plant management and care practices.
Two Skill/Concept	ADVH 3.3 Demonstrate and communicate understanding of specialized growing techniques.

ADVH 4: Apply principles of design in plant systems to enhance an environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ADVH 4.1 Compare plants based on quality and function.
Four Extended Thinking	ADVH 4.2 Create designs using plants.
Four Extended Thinking	ADVH 4.3 Apply concepts of proper use of plants in their environment.
Two Skill/Concept	ADVH 4.4 Evaluate a design and provide feedback and suggestions for improvement.

ADVH 5: Develop a business plan for owning and/or operating a horticulture business.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ADVH 5.1 Apply concepts of business management to a horticulture business

ADVH 6: Develop employability skills related to the Plant Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Develop	ADVH 6.1 Develop soft skills to enhance employability.

ADVH 7 Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ADVH 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ADVH 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ADVH 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ADVH 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ADVH 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Independent Supervised Agricultural Experience (SAE)

Career Cluster	Agriculture, Food and Natural Resources
Course Code	
Prerequisite(s)	None
Credit	0.5 credit each year, up to 2 credits per student maximum (90 hours of recorded work time = 0.5 credit)
Program of Study and Sequence	This course can be used to supplement Agriculture, Food and Natural Resources programs of study and is designed to evolve with a student through high school. Students must also take at least .5 credits of an AFNR course during the same school year to qualify for FFA membership
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Meets work-based learning expectations
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture, Food, and Natural Resources
Resources	SAE for All

Course Description

A Supervised Agricultural Experience (SAE) is a structured experiential learning opportunity that takes place in a setting outside of regular school hours. SAE is student-led, instructor-supervised, work-based learning experience that results in measurable outcomes within a predefined, agreed upon set of Agriculture, Food and Natural Resources (AFNR) Technical Standards and Career Ready Practices aligned to the student's career plan of study. SAEs allow students to experience the diversity of agriculture and natural resources industries and to gain exposure to agricultural-related career pathways. SAEs require a documented formal project scope, accurate recordkeeping, and advisor supervision. The SAE is conducted by all students in the agricultural education program. It consists of four components: (1) career exploration and planning, (2) personal financial management and planning, (3) workplace safety, (4) agricultural literacy and exploration.

SAE credits do not count toward FFA membership requirement of .5 credit per year. Hours are completed outside of AFNR classroom time. General instruction in SAE occurs within each AFNR course.

Course Standards

SAE 1: Examine the general philosophy and objectives of SAE programs.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	SAE 1.1 Identify and describe the types of SAEs.
Two Skill/Concept	SAE 1.2 Compare and contrast the applications and benefits of different types of SAEs.
Three Strategic Thinking	SAE 1.3 Communicate understanding by selecting a specific project to build knowledge and skills in a particular agriculture area.

SAE 2 Utilize project management and recordkeeping skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SAE 2.1 Formulate annual SMART goals for the SAE project or placement and apply the concepts of project planning to monitor and evaluate SAE progress.
Two Skill/Concept	SAE 2.2 Accurately maintain a prescribed recordkeeping system and apply proper financial record keeping skills as required by the specific project.
Three Strategic Thinking	SAE 2.3 Utilize records to direct students' future project plans.
Four Extended Thinking	SAE 2.4 Conduct at least 90 hours of research, work, or activities related to the chosen SAE project.
Four Extended Thinking	SAE 2.5 Complete an FFA award application.

SAE 3: Demonstrate personal growth and exhibit characteristics important to career success.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SAE 3.1 Develop personal SMART goals and conduct activities to work toward individual and career development.
Two Skill/Concept	SAE 3.2 Explore and compare regional career opportunities from multiple sources.
Four Extended Thinking	SAE 3.3 Identify and develop knowledge and technical skills necessary for selected careers.
Four Extended Thinking	SAE 3.4 Develop soft skills.

SAE 4: Develop and demonstrate leadership skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SAE 4.1 Exhibit leadership skills needed for careers in the AFNR industry.
Three Strategic Thinking	SAE 4.2 Engage in youth leadership opportunities to practice and develop effective leadership skills.

SAE 5: Understand and demonstrate occupational safety and ethics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SAE 5.1 Demonstrate appropriate health and safety procedures for activities aligned with SAE project.
Three Strategic Thinking	SAE 5.2 Identify and discuss occupational ethics, legal responsibilities, and regulatory compliance issues in relation to specific activities and/or careers aligned with SAE projects.



Introduction to AFNR

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18001
Prerequisite(s)	None
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Foundation Course – Introduction to Agriculture, Food & Natural Resources – Pathway Course - Capstone
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; *Agriculture Education
Resources	

Course Description

This course allows students to study a variety of agricultural topics across the six Agriculture, Food, and Natural Resources pathways including natural resources, animal and plant science, food products and process systems, and agribusiness. It serves as an introduction to much of the coursework included within the AFNR cluster. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, biology, English and human relations skills will be reinforced in the course. Application of clinical and leadership skills are provided by participating in activities, conferences, and skills competitions such as the Career Development Events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience (SAE).

Program of Study Application

Introduction to Agriculture, Food & Natural Resources is a cluster course in the Agriculture, Food and Natural Resources cluster. Introduction to Agriculture, Food & Natural Resources would be preceded by a foundation course and would prepare a student to take a first-level course in any of the Agriculture, Food and Natural Resources pathways.

Course Standards

ITA 1: Examine the role of FFA in agricultural education programs.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ITA 1.1 Summarize the history, organization, and traditions of FFA.
One Recall	ITA 1.2 Explore opportunities in FFA.
Two Skill/Concept	ITA 1.3 Demonstrate proper use of parliamentary procedure.

ITA 2: Describe the types of Supervised Agricultural Experiences.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ITA 2.1 Evaluate the benefits and types of SAE programs.
Three Strategic Thinking	ITA 2.2 Develop a plan and maintain SAE records.

ITA 3: Discuss the concept of natural resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ITA 3.1 Classify different types of natural resources to enable protection, conservation, enhancement, and management in a particular geographical region.
One Recall	ITA 3.2 Explore South Dakota fish and wildlife species and investigate their ecological needs.
Two Skill/Concept	ITA 3.3 Explain human interaction with natural resources, fish, and wildlife.

ITA 4: Describe the animal science industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ITA 4.1 Examine the large and small animal science industries.
Two Skill/Concept	ITA 4.2 Analyze historic and current trends impacting the animal science industry.

ITA 5: Describe plant science industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ITA 5.1 Examine the plant science and horticulture industries.
Two Skill/Concept	ITA 5.2 Analyze historic and current trends impacting the plant science and horticulture industries.

ITA 6: Summarize basic agricultural business principles.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ITA 6.1 Investigate various principles and concepts in different AFNR businesses.

ITA 7: Explore food products and process systems industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ITA 7.1 Illustrate how raw commodities become table-ready food products.
One Recall	ITA 7.2 Explain basic food safety principles.

ITA 8: Use basic principles of agricultural power, structural, and technical systems technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ITA 8.1 Explore basic principles involved in agricultural power, structural, and technical systems technology.
Two Skill/Concept	ITA 8.2 Understand, demonstrate, and use proper safety procedures and equipment.

ITA 9: Develop employability skills related to the AFNR cluster.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ITA 9.1 Develop soft skills to enhance employability.



Issues in Environmental Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	
Prerequisite(s)	None
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster Course – Environmental Science – Pathway Course-Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, service learning, workplace tours, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Natural Resources & Environmental Service System Pathway Endorsement; 7-12 Science – Biology; *Agriculture Education
Resources	

Course Description

Agriculture and tourism are South Dakota's two leading industries. For these industries to thrive, we must continue to protect and manage the environment with conservation in mind. Environmental Science is a course that enables students to develop an understanding of the natural environment and the environmental problems the world faces. Biology, statistics, algebra, English, and human relations skills will be reinforced throughout the course. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences and related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience (SAE) Program/Internship.

Program of Study Application

Environmental Science is a pathway course in the Agriculture, Food and Natural Resources Cluster and Environmental Service Systems Pathway. Environmental Science would follow a cluster course and will prepare a student to participate in Fundamental Natural Resources or Agriculture Biotechnology.

Course Standards

IES 1: Examine ecological principles and functions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IES 1.1 Examine the structure and function of ecosystems.
Four Extended Thinking	IES 1.2 Analyze the major biomes of the earth and the biodiversity associated with these biomes.
Four Extended Thinking	IES 1.3 Analyze population dynamics.

IES 2: Evaluate human population dynamics on the environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	IES 2.1 Evaluate factors affecting the human population.
Four Extended Thinking	IES 2.2 Evaluate the consequences of human population growth.
Four Extended Thinking	IES 2.3 Evaluate approaches that address overpopulation.

IES 3: Appraise our natural resources, their conservation and management.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IES 3.1 Explain the types, uses and history of renewable and nonrenewable resources.
Three Strategic Thinking	IES 3.2 Assess methods of conservation of common non–energy natural resources.
Two Skill/Concept	IES 3.3 Examine the impact of waste production and management on the environment.

IES 4: Examine energy sources and their conservation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IES 4.1 Compare and contrast conventional and alternative energy sources.
Two Skill/Concept	IES 4.2 Examine the types of energy-related pollution.
Two Skill/Concept	IES 4.3 Compare various methods of energy conservation.

IES 5: Examine consequences of human interaction with the environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IES 5.1 Examine the causes, environmental effects and methods for controlling pollution.
Two Skill/Concept	IES 5.2 Examine environmental impact on human health.
Four Extended Thinking	IES 5.3 Appraise the sustainability of human practices as they relate to water quality, agriculture/forestry/fishing, mining, energy and land use.

IES 6: Appraise personal and civic responsibility with regard to the environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	IES 6.1 Evaluate personal views concerning the environment.
Four Extended Thinking	IES 6.2 Evaluate the rights and responsibilities of citizens in maintaining a healthy environment.

IES 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IES 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	IES 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	IES 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	IES 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	IES 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.



Wildlife and Fisheries

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18501
Prerequisite(s)	None
Credit	0.5 - 1
Program of Study and Sequence	Cluster course – Fundamental Natural Resources – Wildlife and Fisheries – Capstone experience
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurship, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Natural Resources & Environmental Sciences Pathway Endorsement; *Agriculture Education
Resources	

Course Description:

Management of South Dakota's wildlife and fisheries is critical to our future economic stability. Skills gained in this area will be beneficial to students seeking careers in the many facets of wildlife and fisheries. The Wildlife and Fisheries course addresses the biological and environmental issues related to wildlife and fisheries management within our state. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Biology, English and human relations skills will be reinforced throughout the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences and skills competitions such as the Natural Resources Career Development Event or related proficiency award areas. All students are expected to maintain a Supervised Agricultural Experience program.

Program of Study Application

Wildlife and Fisheries is a second pathway course in the Agriculture, Food and Natural Resources cluster, Natural Resources and Environmental Science Systems pathway. Wildlife and Fisheries would follow Fundamental Natural Resources and would prepare a student to participate in a capstone experience.

Course Standards

WF 1 Demonstrate the importance of fish and wildlife management, including their respective habitats.

Two Skill/Concept	WF 1.1 Demonstrate understanding of natural resource components to the management of wildlife and fish.
One Recall	WF 1.2 Identify fish and wildlife species.
Two Skill/Concept	WF 1.3 Identify healthy habitat for wildlife and fish.

WF 2 Identify economic and social issues related to fish and wildlife

Two Skill/Concept	WF 2.1 Discuss hunting/harvesting fish and wildlife species as a management technique.
Two Skill/Concept	WF 2.2 Investigate processing techniques to use game and fish as food sources.
Three Strategic Thinking	WF 2.3 Demonstrate safety practices related to hunting and fishing activities.
Two Skill/Concept	WF 2.4 Investigate impact of invasive species on wildlife and fisheries.

WF 3 Compare life patterns of fish and wildlife.

One Recall	WF 3.1 Identify seasonal rituals of fish and wildlife species.
Three Strategic Thinking	WF 3.2 Diagnose wildlife and fish diseases.
Four Extended Thinking	WF 3.3 Create a plan to mitigate wildlife and fish diseases.

WF 4 Investigate careers in wildlife and fisheries conservation.

Two Skill/Concept	WF 4.1 Locate, identify, research and interpret career information.
Two Skill/Concept	WF 4.2 Compare and contrast characteristics of various careers.

WF 5 Develop employability skills related to the Animal Systems Pathway.

Two Skill/Concept	WF 5.1 Develop soft skills to enhance employability.
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CareerClusters™
PATHWAYS TO COLLEGE & CAREER READINESS

Architecture & Construction

State Approved Courses for Architecture & Construction Programs

Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

Intro to Architecture and Construction (17006)
Drafting & Design I (21102)
Introduction to Technology Education (21051)

Pathway Courses

<i>Design/Pre-Construction Pathway</i>	<i>Construction Pathway</i>	<i>Maintenance/Operations Pathway</i>
Drafting and Design II- Architectural (21103) Finish Carpentry I (17007) Finish Carpentry II (17005)	Drafting and Design II- Architectural (21103) Finish Carpentry I (17007) Finish Carpentry II (17005) Construction Trades I (17002) Construction Trades II - Residential (17003) Construction Equipment I (17990) Construction Equipment II (17991)	Construction Equipment I (17990) Construction Equipment II (17991)

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Architecture & Construction Career Cluster.

Academic CTE Courses

Geometry (02072^)
Trigonometry (02103^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)

Introduction to Architecture and Construction

Career Cluster	Architecture and Construction
Course Code	17006
Prerequisite(s)	None
Credit	.5 - 1
Program of Study and Sequence	Intro to Architecture and Construction is the recommended prerequisite for the three career pathways in Architecture and Construction: 1) Architectural Drafting Pathway 2) Cabinetry Pathway, and 3) Residential Construction Pathway
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Tours, guest speakers, job shadowing
Industry Certifications	None
Dual Credit or Dual Enrollment	None
Teacher Certification	Architecture & Construction Cluster Endorsement; Building Trades Endorsement;
Resources	None

Course Description:

This course will prepare students to delve into the architecture and construction industry. It covers all three construction career pathways offered, including architecture/drafting along with cabinetry and building construction. Students will explore many different topics where they will be able to complete hands on activities to enhance the learning process.

Program of Study Application

Intro to Architecture and Construction is the recommended prerequisite for the three career pathways in Architecture and Construction:

- Architectural Drafting Pathway

- Cabinetry Pathway
- Residential Construction Pathway

Course Standards

Indicator# IAC 1 Explore the different career opportunities involved in the architecture and construction industries.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	IAC 1.1 Compare career possibilities in the drafting industry.	
Two Apply	IAC 1.3 Research career opportunities in the architecture and construction fields.	

Indicator# IAC 2 Introduce safety concepts in the architecture and construction industries.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	IAC 2.1 Apply general shop safety principles	
One Identify	IAC 2.2 Identify job site and career safety concepts	
One Define	IAC 2.3 Define OSHA (Occupational Safety Health Administration) and its role in the construction industries	
Two Apply	IAC 2.4 Apply general hand and power tool safety procedures	

Indicator# IAC 3 Apply basic math principles used in the architecture and construction industries.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two	IAC 3.1 Demonstrate proper use of appropriate math skills	

Demonstrate		
Two Demonstrate	IAC 3.2 Demonstrate proper measuring and layout skills	

Indicator# IAC 4 Recognize the materials used in the architecture and construction industries.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Identify	IAC 4.1 Identify wood species and engineered building materials.	
One Recognize	IAC 4.2 Recognize proper application of fasteners, adhesives, and hardware.	
One Explore	IAC 4.3 Explore new upcoming materials used in building industry.	

Indicator# IAC 5 Examine Basic drafting skills used in architecture and construction.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Recognize	IAC 5.1 Recognize basic drafting terms and abbreviations	
Two Differentiate	IAC 5.2 Differentiate between different drafting styles	
Two Demonstrate	IAC 5.3 Identify different aspects of blueprints/project plans to show a working knowledge of specifications.	
Two Classify	IAC 5.4 Classify the different styles of residential architectural structures	

Indicator# IAC 6 Display skills needed in architecture and construction industries.

Career Cluster: Architecture and Construction

Course: Introduction to Architecture and Construction

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	IAC6.1 Apply proper measuring and cutting techniques to perform job related tasks	
Two Display	IAC 6.2 Display a working knowledge of tools and equipment used in the industry	
Two Construct	IAC 6.3 Construct a project using the assigned design process	
Two Demonstrate	IAC 6.4 Demonstrate necessary job skills needed in architecture and construction industries	

Construction Equipment I

	Architecture and Construction
Course Code	17990
Prerequisite(s)	Introduction to Architecture and Construction
Credit	.5 - 1
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Construction Trades I, Construction Trades II- Residential, Construction Equipment I, Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	This standard includes Workplace Tours, Service learning and Apprenticeship
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Maintenance/Operations Pathway; Construction Trades I Endorsement
Resources	

Course Description:

Construction Equipment I: Students will gain an understanding of safely operating the tools and equipment in the construction trades. Exploration of earth-moving and construction equipment within the context of OSHA and industrial operations standards. Emphasis should be placed on controlling equipment to perform specific operations per industry standards and on basic troubleshooting and maintenance procedures.

Program of Study Application

Construction Equipment I is an intermediate pathway course in the Architecture & Construction career cluster. It can be found in both the Construction and Maintenance/Operations pathways. It is to be preceded by a cluster course and followed by Construction Equipment II and/or a capstone course.

Indicator #CEI 1 Orientation to the Trade

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEI 1.1 Explain the basic terminology, types, and uses of equipment	
Level 1: Recall	CEI 1.2 Identify career opportunities available to construction equipment operators and explain the purpose and objectives of an apprentice training program	
Level 1: Recall	CEI 1.3 Explain the responsibilities and characteristics of a good operator	
Level 2: Skill/Concept	CEI 1.4 Explain the importance of construction equipment safety	
Level 1: Recall	CEI 1.5 Describe preventive maintenance procedures	

Indicator #CEI 2: Construction Equipment Safety

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEI 2.1 Explain the importance of safety when working with construction equipment	

Level 1: Recall	CEI 2.2 State the purpose of signs, tags, barricades, and lockout/tagout devices used on construction sites	
Level 1: Recall	CEI 2.3 Describe the long- and short-term health effects, first-aid measures, handling, and storage, and/or required personal protective equipment (PPE)	
Level 1: Recall	CEI 2.4 Identify safeguards used in a highway construction work zone	
Level 1: Recall	CEI 2.5 State the general guidelines for a safe operation, maintenance, and transportations of construction equipment	
Level 1: Recall	CEI 2.6 Explain the dangers of working around an excavation area with construction equipment	
Level 1: Recall	CEI 2.7 Describe the importance of Safety Data Sheets (SDS)	

Indicator # CEI 3: FORKLIFTS-Students understand and perform, where possible, lifting, transporting, and placement forklift operations with a focus on safety.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEI 3.1 Identify the components of forklifts	
Level 1: Recall	CEI 3.2 Explain the operations of various components	

Level 2: Skill/Concept	CEI 3.3 Describe preventive maintenance procedures	
Level 1: Recall	CEI 3.4 Describe startup and operating procedures for forklift	

Indicator #CEI 4: ON-ROAD DUMP TRUCKS-Students understand and perform, where possible, appropriate operations using On-Road Dump Trucks.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEI 4.1 Identify the various types of on-road dump trucks	
Level 1: Recall	CEI 4.2 Identify and describe instruments and specialized control systems in dump trucks	
Level 1: Recall	CEI 4.3 List the operator inspection and maintenance requirements	
Level 1: Recall	CEI 4.4 Explain safe driving practices for dump trucks	

Level 2: Skill/Concept	CEI 4.5 Perform basic operations using a dump truck	
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Indicator #CEI 5: SKID STEER-Students understand and perform, where applicable, usage and proper functionality of skid steers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEI 5.2 Describe the pre start inspection requirements for skid loader	
Level 1: Recall	CEI 5.3 Describe startup, shutdown, and operations procedures for a skid loader	

Indicator #CEI 6: INTERPRETING CIVIL DRAWINGS-Students read and interpret construction site drawings to perform operations.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CEI 6.2 Read and interpret drawings	
Level 1: Recall	CEI 6.3 Define common abbreviations	
Level 1: Recall	CEI 6.4 Describe how as-built drawings are prepared	

Indicator #CEI 7:-EQUIPMENT OPERATION-Students understand and perform, where applicable, operations on various pieces of heavy equipment to demonstrate proper startup, shut off, and maintenance procedures for each piece of machinery.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
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Level 1: Recall	CEI 7.2 Describe pre start inspection requirements for various pieces of machinery	
Level 1: Recall	CEI 7.3 List task related work activities	

Construction Equipment II

	Architecture and Construction II
Course Code	17991
Prerequisite(s)	Introduction to Architecture and Construction, Construction Equipment I
Credit	.5 - 1
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Construction Equipment I, Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	This standard includes Workplace Tours, Service learning and Apprenticeship
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Maintenance/Operations Pathway; Construction Trades II Endorsement;
Resources	

Course Description:

Students will gain an advanced understanding of safely operating the tools and equipment in the construction trades. Operation of earth-moving and construction equipment within the context of OSHA and industrial operations standards. Emphasis should be placed on controlling equipment to perform specific operations per industry standards and on basic troubleshooting and maintenance procedures.

Program of Study Application

Construction Equipment II is an advanced pathway course in the Architecture & Construction career cluster. It can be found in both the Construction and Maintenance/Operations pathways. It is to be preceded by a cluster course, Construction Equipment I and followed by a capstone course.

Indicator #CEII 1: Orientation to the Trade

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEII 1.1 Explain the basic terminology, types, and uses of equipment	
Level 1: Recall	CEII 1.2 Identify career opportunities available to construction equipment operators and explain the purpose and objectives of an apprentice training program	
Level 1: Recall	CEII 1.3 Explain the responsibilities and characteristics of a good operator	
Level 2: Skill/Concept	CEII 1.4 Explain the importance of construction equipment safety	
Level 1: Recall	CEII 1.5 Describe preventive maintenance procedures	

Indicator #CEI 2: Construction Equipment Safety

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
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Level 1: Recall	CEI 2.1 Explain the importance of safety when working with construction equipment	
Level 1: Recall	CEI 2.2 State the purpose of signs, tags, barricades, and lockout/tagout devices used on construction sites	
Level 1: Recall	CEI 2.3 Describe the long- and short-term health effects, first-aid measures, handling, and storage, and/or required personal protective equipment (PPE)	
Level 1: Recall	CEI 2.4 Identify safeguards used in a highway construction work zone	
Level 1: Recall	CEI 2.5 State the general guidelines for a safe operation, maintenance, and transportations of construction equipment	
Level 1: Recall	CEI 2.6 Explain the dangers of working around an excavation area with construction equipment	
Level 1: Recall	CEI 2.7 Describe the importance of Safety Data Sheets (SDS)	

Indicator # CEI 3: FORKLIFTS-Students understand and perform, where possible, lifting, transporting, and placement forklift operations with a focus on safety.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CEII 3.1 Demonstrate the operations of various components	
Level 1: Recall	CEII 3.2 Perform preventive maintenance procedures and explain the operations of various components	

Level 2: Skill/Concept	CEII 3.3 Demonstrate proper startup and operating procedures for forklift	
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Indicator #CEI 4: ON-ROAD DUMP TRUCKS-Students understand and perform, where possible, appropriate operations using On-Road Dump Trucks.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEII 4.1 Review the various types of on-road dump trucks	
Level 1: Recall	CEII 4.2 Review the requirements of a CDL for on road dump truck operation	
Level 1: Recall	CEII 4.3 Understand the use of instruments and specialized control systems in dump trucks	
Level 1: Recall	CEII 4.4 List the operator inspection and maintenance requirements	
Level 2: Skill/Concept	CEII 4.5 Demonstrate safe driving practices for dump trucks	
Level 2: Skill/Concept	CEII 4.6 Perform basic operations using a dump truck	

Indicator #CEI 5: SKID STEER-Students understand and perform, where applicable, usage and proper functionality of skid steers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CEII 5.1 Operate a skid loader safely	

Level 1: Recall	CEII 5.2 Demonstrate the pre start inspection requirements for skid loader	
Level 2: Skill/Concept	CEII 5.3 Demonstrate startup, shutdown, and operations procedures for a skid loader	

Indicator #CEII 6: EXCAVATION DIMENSIONS-Students perform calculations to carry out excavation operations.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEII 6.1 Explain and demonstrate the correct use of formulas for site layout	
Level 1: Recall	CEII 6.2 Understand the proper sequence of operations in a formula	
Level 1: Recall	CEII 6.3 Demonstrate understanding of different types of angles	
Level 2: Skill/Concept	CEII 6.4 Demonstrate how to calculate/estimate area and volume	

Indicator #CEII 7: INTERPRETING CIVIL DRAWINGS-Students read and interpret construction site drawings to perform operations.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CEII 7.1 Analyze types of drawings and prints used in equipment operations	
Level 2: Skill/Concept	CEII 7.2 Demonstrate the ability to read and interpret drawings	
Level 1: Recall	CEII 7.3 Define common abbreviations	

Level 1: Recall	CEII 7.4 Explain the purpose of the plan specifications for projects	
Level 1: Recall	CEII 7.5 Describe how as-built drawings are prepared	

Indicator #CEII 8: SITE WORK-Students perform appropriate on-site heavy equipment operations including interpreting grade stakes and controlling surface and ground and surface water at a worksite.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEII 8.1 Explain the purpose of site safety	
Level 1: Recall	CEII 8.2 Understand the different types of sites and conditions (e.g. building site, highway site, etc.) and how they differ	

Indicator #CEII 6: EXCAVATION DIMENSIONS-Students perform calculations to carry out excavation operations.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CEII 9.1 Demonstrate the functions of various components of equipment	
Level 2: Skill/Concept	CEII 9.2 Demonstrate pre-start inspection requirements for various pieces of machinery	
Level 2: Skill/Concept	CEII 9.3 Demonstrate task-related work activities	

Career Cluster: Architecture and Construction

Course: Construction Equipment II

Construction Trades I

	Architecture and Construction
Course Code	17002
Prerequisite(s)	Introduction to Architecture and Construction
Credit	.5 - 1
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Construction Trades I, Residential Construction, Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	This standard includes Workplace Tours, Service learning and Apprenticeship
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Construction Trades I Endorsement;
Resources	

Course Description:

Students will gain insight into the career within construction by developing practical skills such as safety on the jobsite, construction math, use of hand/power/pneumatic tools, basic residential blueprint reading, basic land surveying techniques, building construction, plumbing, electrical, concrete, employability skills and career exploration required to succeed in the construction industry.

Program of Study Application

This is the third course in the suggested sequence of the Residential Construction Program of Study. It is recommended that it is preceded by (1) Foundation Courses, (2) Introduction to Architecture and Construction, and followed by (4) Construction Trades II-Residential and (5) Capstone Experience.

Indicator # CT 1 Understand and Apply Industry Safety Procedures

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CT1.1 Identify and demonstrate the proper industry safety standards	

Indicator # CT 2 Utilize appropriate industry math skills and formulas

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CT2.1 Understand and demonstrate basic math skills and formulas	

Indicator # CT 3 Identify and correctly use appropriate hand, power, and pneumatic tools

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CT3.1 Demonstrate safe and proper use of hand tools.	
Level 2 Skill/ Concept	CT3.2 Demonstrate safe and proper use of power tools	

Level 2 Skill / Concept	CT3.3 Demonstrate safe and proper use of pneumatic tools.	
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Indicator # CT 4 Understand blueprint reading and perform basic survey techniques

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	CT4.1 Demonstrate how to read blueprints.	
Level 3 Strategic Thinking	CT4.2 Demonstrate basic survey techniques.	

Indicator # CT 5 Apply basic organizational, spatial, structural and construction principles of carpentry

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	CT 5.1 Demonstrate the understanding of the building process by the building of a construction project.	

Indicator # CT 6 Study principles, standards and applications of plumbing

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>

Level 1 Recall	CT6.1 Define safety procedures for plumbing.	
Level 2 Skill/ Concept	CT6.2 Distinguish pipe sizes, fittings, adapters, and coupling.	
Level 3 Strategic Thinking	CT6.3 Demonstrate the use of plumbing materials.	

Indicator # CT 7 Employ basic knowledge and methods of electrical wiring

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	CT7.1 Select electrical materials considering safety.	
Level 2 Skill/ Concept	CT7.2 Identify electrical materials.	
Strategic Thinking	CT7.3 Illustrate uses of electrical materials.	

Indicator # CT 8 Employ basic knowledge and methods of concrete technology

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	CT8.1 Identify safe practice associated with concrete materials	
Level 3 Strategic Thinking	CT8.2 Calculate the various required ingredients used in concrete.	
Level 4 Extended Thinking	CT8.3 Employ application of concrete in different situations.	

Indicator # CT 9 Student will participate in career exploration activities

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4 Extended Thinking	CT9.1 Research career opportunities in residential and commercial (including horizontal and vertical) construction.	

Construction Trades II- Residential

Career Cluster	Architecture and Construction
Course Code	17003
Prerequisite(s)	Introduction to Architecture and Construction; Construction Trades I
Credit	.5-1
Program of Study and Sequence	Foundation Course-Introduction to Architecture and Construction- Construction Trades I
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Shadowing, speakers, internships, apprenticeships
Industry Certifications	OSHA 10
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Building Trades Endorsement
Resources	

Course Description:

Students will gain in depth knowledge of residential construction by identifying and demonstrating correct safety procedures, construction math, blueprint reading and basic surveying techniques. The student will also be able to identify building products, and safely and correctly use various hand/power/pneumatic tools. Concrete construction applications and construction of a residential house will be the main thrust of this course. The student will be able to frame floor, wall and ceiling/roof systems. Once the framing is complete the student will install windows and doors, apply thermal and moisture protection, apply exterior sheathing along with exterior siding and roofing material. Interior work will be performed by installing drywall, installing cabinets and conducting interior finish work. The concept of stair layout and construction will be incorporated in this class. Basic residential electrical and plumbing will be performed as it relates to the necessary requirements in the building process. The National Center for Construction Education & Research (NCCER) competencies/objectives are followed as a resource.

Program of Study Application

This is the fourth course in the suggested sequence of the Architecture and Construction Program of Study. It is recommended that it is preceded by (1) Foundation Courses, (2) Introduction to Architecture and Construction, and (3) Construction Trades I; and followed by (5) Capstone Experience.

Course Standards

Indicator # CTIIR 1 Understand and apply industry safety procedures

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	CTIIR1.1 Demonstrate proper industry safety standards.	

Indicator # CTIIR 2: Utilize appropriate industry math skills and formulas

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	CTIIR2.1 Understand and demonstrate basic math skills.	

Notes:

Indicator # CTIIR 3 Understand concepts of blueprint reading and perform basic survey techniques

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR3.1 Demonstrate how to read blueprints.	
Level 3 Strategic Thinking	CTIIR3.2 Demonstrate survey techniques and site layout.	

Notes:

Indicator # CTIIR 4 Identify and understand wood building materials, fasteners, and adhesives

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	CTIIR4.1 Understand and demonstrate the use of wood building materials.	
Level 1 Recall	CTIIR4.2 Understand and demonstrate the use of fasteners and adhesives.	

Indicator # CTIIR 5 Identify and correctly use appropriate hand, power and pneumatic tools

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR5.1 Demonstrate safe and proper use of hand tools.	
Level 2 Skill/ Concept	CTIIR5.2 Demonstrate safe and proper use of power tools.	
Level 2 Skill/ Concept	CTIIR5.3 Demonstrate safe and proper use of pneumatic tools.	

Indicator # CTIIR 6 Integrate concrete technology to achieve thorough construction background

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	CTIIR6.1 Understand and demonstrate the uses of concrete and reinforcing materials.	

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Indicator # CTIIR 7 Understand and perform framing of flooring, wall, ceiling and roofing systems

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR7.1 Understand and demonstrate framing of flooring systems	
Level 3 Strategic Thinking	CTIIR7.2 Understand and demonstrate framing of wall and ceiling systems.	

Level 3 Strategic Thinking	CTIIR7.3 Understand and demonstrate framing of a roofing systems.	
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Indicator # CTIIR 8 Understand and demonstrate installation of windows and exterior doors

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR8.1 Understand and demonstrate installation of windows.	
Level 2 Skill/ Concept	CTIIR8.2 Understand and demonstrate installation of exterior doors.	

Notes:**Indicator # CTIIR 9 Identify and perform different exterior finishing methods**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR9.1 Understand and demonstrate installation of exterior finish.	

Notes:**Indicator # CTIIR 10 Identify and understand different roofing applications**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/	CTIIR10.1 Understand and demonstrate installation of roofing materials. •	

Concept		
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Notes:**Indicator # CTIIR 11 Understand the importance of, and properly install, thermal and moisture protection**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR11.1 Understand and demonstrate installation of thermal and moisture protection.	

Indicator # CTIIR 12 Perform drywall installation and finishing techniques

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR12.1 Understand and demonstrate drywall installation.	
Level 2 Skill/ Concept	CTIIR12.2 Understand and demonstrate drywall finishing.	

Indicator # CTIIR 13 Understand methods and complete interior finish work

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR13.1 Understand and demonstrate interior finishing.	

Indicator # CTIIR 14 Understand the cabinet manufacturing process and install cabinets

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/	CTIIR14.1 Understand basic cabinet design and installation.	

Concept		
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Indicator # CTIIR 15 Understand and demonstrate installation of stairs.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR15.1 Identify the various types and parts of stairs.	
Level 2 Skill/ Concept	CTIIR15.2 Using appropriate math formula calculate the number and sizes of risers and treads for a stairway.	
Level 2 Skill/ Concept	CTIIR15.3 Layout and cut stringers.	

Indicator # CTIIR 16 Study the principles and standards of Basic Residential Electric and Plumbing applications

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR16.1 Understand and demonstrate basic residential electric and plumbing applications.	

Indicator # CTIIR 17 Student will participate in career exploration activities

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	CTIIR17.1 Research career opportunities in the Architecture and Construction fields.	

Drafting and Design I

Career Cluster	Architecture & Construction
Course Code	21102
Prerequisite(s)	Algebra I and Geometry Recommended
Credit	.5 - 1
Program of Study and Sequence	Drafting and Design I is an introductory course in the Architectural Drafting, Cabinetry, and Residential Construction Pathways
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Tours, guest speakers, job shadowing
Industry Certifications	This course provides instruction toward attainment of ADDA Apprentice Drafting certification
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Design & Pre-Construction Pathway Endorsement; Manufacturing Cluster Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Drafting Endorsement;
Resources	

Course Description:

People with careers in design and pre-construction create our future. They turn a concept into a set of plans whether for a component, a system, or a building. Their plans guide other construction or manufacturing professionals as they continue the building process. This course will expose students to the American Design Drafting Association (ADDA) Apprentice standards in both mechanical and architectural drafting. The desire for this course is for the students to receive industry based training at the basic level before taking either the Mechanical or Architectural drafting courses. It is highly recommended that students have taken Algebra I and Geometry before taking this course.

Program of Study Application: Drafting and Design I is an introductory course in the Architectural Drafting and Design/Pre-Construction Pathways. This course follows foundational CTE courses, and is designed to prepare individuals to participate successfully in pathway courses in the Design/Pre-Construction, Construction, or Maintenance/Operations pathways.

Course Standards**Indicator # DDI 1 Examine basic drafting terminology and equipment.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Recognize	DDI 1.1 Recognize basic drafting terms and abbreviations.	
Two Differentiate	DDI 1.2 Differentiate basic and CAD drafting tools and their uses.	

Indicator # DDI 2 Apply basic math skills to design work.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	DDI 2.1 Apply algebraic and trigonometric formulas used in drafting and design.	
Two Understand	DDI 2.2 Understand the various drawing scales used in drafting.	

Indicator # DDI 3 Examine basic drafting fundamental and technical skills

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Integrate	DDI 3.1 Integrate symbols, lettering and Geometric shapes used on technical drawings.	
One Illustrate	DDI 3.2 Illustrate line types recommended by American National Standards Institute (ANSI).	
One Define	DDI 3.3 Define dimensioning styles and techniques on metric and imperial drawings.	

Indicator # DDI 4 Apply drawing techniques to produce various technical plans.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Four Create	DDI 4.1 Create orthographic projections	
Four Create	DDI 4.2 Create isometric and pictorial drawings.	

Indicator # DDI 5 Implement computer aided software into design work.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Identify	DDI 5.1 Identify CAD skills and applications of technical design.	
Two Apply	DDI 5.2 Apply CAD defaults and preferences to set up a drawing.	
Four Generate	DDI 5.3 Generate drawings and projections using CAD software.	

Indicator # DDI 6 Explore career-ready practices.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Understand	DDI 6.1 Examine careers in architectural and mechanical drafting.	
Two Compare	DDI 6.2 Compare career possibilities in the drafting industry.	

Drafting and Design II

Career Cluster	Architecture & Construction
Course Code	21103
Prerequisite(s)	Drafting and Design I
Credit	.5
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Introduction to Drafting and Design, Drafting and Design II, Capstone Course
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job Shadowing, Mentorships, Service Learning, Internships, Apprenticeship
Industry Certifications	ADDA Architectural Apprentice certification http://www.adda.org
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Design & Pre-Construction Pathway Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Drafting Endorsement;
Resources	None

Course Description:

People with careers in design and pre-construction create our future. They turn a concept into a set of plans whether for a component, a system or a building. The plans guide other construction or manufacturing professionals as they continue the building process. These standards, combined with the knowledge and skills students master in the Drafting and Design I course, will provide students the basis to sit for the ADDA (American Drafting and Design Association) Architectural Apprentice certification. Details of the ADDA competencies addressed in each standard can be found at <http://www.adda.org>.

Program of Study Application

This is the fourth course in the suggested sequence of the Architectural & Construction career cluster. It is recommended that it is preceded by (1) Foundation Courses, (2) Introduction to Architecture and Construction, and (3) Drafting and Design I; and followed by (5) Capstone Experience.

Course Standards

Indicator # DDII 1 Understand architectural design fundamentals and history.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	DDII 1.1 Identify architectural products and styles.	
Level 2 Skill/ Concept	DDII 1.2 Interpret the fundamentals of framing plans.	
Level 2 Skill/ Concept	DDII 1.3 Identify building codes and governing bodies	
Level 1 Recall	DDII 1.4 Identify residential building materials	

Indicator # DDII 2 Understand drawing management, dimensioning, and notations.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	DDII 2.1 Examine drawing identification and management techniques used in architectural drafting.	
Level 3 Strategic Thinking	DDII 2.2 Illustrate proper dimensioning and notation practices used in architectural drafting.	

Indicator # DDII 3 Develop a residential plot and foundation system plan.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4 Extended Thinking	DDII 3.1 Create a plot/site plan for a residence.	
Level 3	DDII 3.2 Design footings and foundation for a residence.	•

Strategic Thinking		
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Indicator # DDII 4 Generate the necessary construction plans to build a residence.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	DDII 4.1 Develop a floor plan using accepted symbols and techniques.	
Level 3 Strategic Thinking	DDII 4.2 Prepare a working drawing of the residence HVAC, lights and electrical needs.	
Level 3 Strategic Thinking	DDII 4.3 Design a residential roof plan.	
Level 2 Skill/ Concept	DDII 4.4 Understand the use of elevations in the design of a residence.	
Level 3 Strategic Thinking	DDII 4.5 Draw interior and exterior stair details appropriate to those found in a residence.	
Level 3 Strategic Thinking	DDII 4.6 Develop door, window, and finishing schedules.	
Level 2 Skill/ Concept	DDII 4.7 Understand basic estimating practices used in the construction industry.	
Level 4 Extended Thinking	DDII 4.8 Generate final presentation drawings and three dimensional computer model.	

Finish Carpentry I

Career Cluster	Architecture and Construction
Course Code	17007
Prerequisite(s)	Introduction to Architecture and Construction
Credit	.5 – 1
Program of Study and Sequence	Cabinetry Sequence
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Work place tours, Guest speakers
Industry Certifications	OSHA 10-Hour Safety Certification
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Building Trades Endorsement;
Resources	

Course Description:

This course is designed to introduce the students to the basics of cabinetry. The course will stress safe and proper use of hand and power tools; safe shop practices and shop environment safety. Students will display a working knowledge of terms and techniques to design and build a wood working project.

Program of Study Application

Introduction to Architecture and Construction is recommended but not required

Finish Carpentry I

Finish Carpentry II

Capstone Experience

Course Standards**Indicator # FCI 1 Observe and apply rules and regulations to comply with personal and shop safety.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	FCI 1.1 Apply hand/power tool and lab safety standards.	
One Describe	FCI 1.2 Describe and wear appropriate personal protective equipment (PPE) when needed.	
One Indicate	FCI 1.3 Indicate a knowledge of government regulations regarding health and safety in the shop.	

Indicator # FCI 2 Explore the different career opportunities in the industry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Investigate	FCI 2.1 Investigate and examine career opportunities in cabinetry industry.	
Two Demonstrate	FCI 2.2 Demonstrate an understanding of necessary job skills needed in cabinetry careers.	

Indicator # FCI 3 Apply basic math principles used in the industry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Demonstrate	FCI 3.1 Demonstrate proper use of appropriate math skills	
Two Demonstrate	FCI 3.2 Demonstrate an understanding of the difference between board feet and linear feet	
Two	FCI 3.3 Demonstrate proper measuring and layout skills	

Demonstrate		
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Indicator # FCI 4 Identify various materials and apply project planning.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Identify	FCI 4.1 Identify wood species and engineered materials.	
Three Analyze	FCI 4.2 Analyze design elements of a project plan.	
Four Create Implement	FCI 4.3 Create and implement a bill of materials and cut list from a project drawing.	
One Identify	FCI 4.4 Identify various types of hardware, fasteners, and adhesives used in the cabinetry industry.	

Indicator # FCI 5 Recognize various cabinetry joinery and assembly techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Demonstrate	FCI 5.1 Demonstrate common joinery techniques	
Two Demonstrate Assemble	FCI 5.2 Demonstrate knowledge of industry concepts to assemble projects	

Indicator # FCI 6 Recognize and apply surface preparation and finishing techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	FCI 6.1 Apply surface preparation techniques	
Two Apply	FCI 6.2 Apply finishing products	

Finish Carpentry II

Career Cluster	Architecture and Construction
Course Code	17005
Prerequisite(s)	Cabinetry
Credit	.5-1
Program of Study and Sequence	Foundation Courses, Introduction to Architecture & Construction, Finish Carpentry I, Finish Carpentry II, Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Service Learning; Work Place Tours; Job Shadowing
Industry Certifications	OSHA 10-Hour Safety Certification
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Design & Pre-Construction Pathway Endorsement
Resources	

Course Description:

This course prepares individuals to apply technical knowledge and skills to plan and estimate projects, as well as set up and operate industrial woodworking machinery. Students will use industrial machinery to design and fabricate casework (cabinetry) and architectural millwork. This course will cover safe use of hand and power tools and machinery used in the production of casework and millwork. A variety of projects will be designed and constructed. Students will apply proper finishing and explore proper installation techniques as part of this program.

Program of Study Application

- Foundation courses
- Intro to architecture and construction (Recommended not required)
- Finish Carpentry I (prerequisite)
- Finish Carpentry II

- Capstone Experience

Course Standards

Indicator # FCII 1 Demonstrate proper rules and regulations to comply with personal and shop safety.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Apply	FCII 1.1 Apply hand/power/industrial tool and lab safety practices.	
Two Determine	FCII 1.2 Determine and wear appropriate personal protective equipment (PPE)	
One Comply	FCII 1.3 Comply with government regulations regarding health and safety in the shop.	

Indicator # FCII 2 Evaluate the career market that surrounds the carpentry industry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Acquire	2.1 Acquire residential, civil and commercial career information and demonstrate knowledge of the career-planning process	
Three Identify	2.2 Identify individual career goals in the carpentry industry.	
Three Develop	2.3 Enhance the development of employment readiness skills	

Indicator # FCII 3 Utilize advanced math skills, formulas, and principles used in cabinetry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Apply	FCII 3.1 Apply geometric formulas to determine areas of various structures.	

Two Apply	FCII 3.2 Apply appropriate formulas to determine percentages/decimals.	
Two Apply	FCII 3.3 Apply appropriate formulas to determine ratios, fractions, and proportion measures.	
Three Apply	FCII 3.4 Apply appropriate formulas to determine measurement of dimensions, spaces, and structures.	
Four Develop Conceptualize	FCII 3.5 Develop a model that shows the conceptual understanding of a three-dimensional form from a two-dimensional drawing.	
One Define	FCII 3.6 Define the X,Y,Z coordinates involved in common Computer numeric control (CNC) applications.	

Indicator # FCII 4 Identify various materials and evaluate the proper application in project planning.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Differentiate	FCII 4.1 Differentiate various cabinetry materials and their appropriate applications.	
Two Identify	FCII 4.2 Identify the common grades of lumber and sheet goods.	
Two Describe	FCII 4.3 Describe and identify natural defects in woods	
One Utilize	FCII 4.4 Utilize proper storage and handling techniques	
Four Develop	FCII 4.5 Create a project plan, bill of materials, cut list and timeline.	

Indicator # FCII 5 Demonstrate advanced skills and techniques used in industry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
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Two Determine	FCII 5.1 Determine plumb, level, and square.	
Two Determine	FCII 5.2 Demonstrate proper techniques used in various sawing, shaping, carving, molding, and routing applications.	
Three Apply Fabricate	FCII 5.3 Apply various fabricating techniques in casework and millwork.	
Three Differentiate	FCII 5.4 Differentiate between different styles in casements	

One Identify	FCII 5.5 Identify and create the basic wood and mechanical joints used in cabinetry.	
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Indicator # FCII 6 Demonstrate the use of cabinet fasteners and hardware.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Determine	FCII 6.1 Determine proper application and use of mechanical fasteners and adhesives.	
Two Analyze	FCII 6.2 Analyze different hardware and their applications.	

Indicator # FCII 7 Demonstrate proper assembly and finish preparation techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Develop	FCII 7.1 Develop logical assembly process/procedure	
Two Demonstrate	FCII 7.2 Demonstrate various ways to remove excess adhesive Example: • Sanding, chiseling, taping, etc.	
Two Apply	FCII 7.3 Apply surface preparation skills before finishing Examples: • Select proper abrasives and sanding equipment • Fillers	

Notes:

Indicator # FCII 8 Demonstrate the use of finishing materials and processes.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Explain	FCII 8.1 Explain the purpose and applications of various types of finishes and finishing processes.	
Two Apply	FCII 8.3 Utilize safe and approved methods for cleanup and disposal (OSHA, EPA, DENR)	

State Approved Courses for Arts, A/V Technology & Communications Programs

Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Entrepreneurship (12053^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

Intro to Arts, A/V Technology & Communications (11001^)
MS Family and Consumer Sciences (19000^)

Pathway Courses

<i>A/V Technology & Film Pathway</i>	<i>Visual Arts Pathway</i>	<i>Journalism & Broadcasting Pathway</i>
Broadcast Technology (11103) Digital Music Production (11056) Digital Production for Entertainment (11153) Media Production (11151^) Multimedia Design (10203^) Photography I (11054) Photography II (11052) Production Technology (11160) Visual Media Design (05162) Graphic Design I (11155^) Graphic Design II (11154) Digital Animation (10207^) Web Development I (10201^) Advanced Web Development (10202) Electronics (17106) Network Technologies (10101)	Fashion Design (19201) Interior Design I (19205^) Interior Design II (19206) Photography I (11054) Photography II (11052) Visual Media Design (05162) Multimedia Design (10203^) Digital Animation (10207^) Journalistic Design (11106) Media Production (11151^) Graphic Design I (11155^) Graphic Design II (11154) Digital Production for Entertainment (11153) Production Technology (11160) Web Development I (10201^) Advanced Web Development (10202)	Broadcast Technology (11103) Digital Production for Entertainment (11153) Journalistic Design (11106) Media Production (11151^) Photography I (11054) Photography II (11052) Production Technology (11160) Visual Media Design (05162) Graphic Design I (11155^) Graphic Design II (11154)

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Arts, A/V Technology & Communications Career Cluster.

Supporting Academic Courses

Sociology (04258^)
Journalism (11101)
Art Appreciation (05151^)
Multimedia Art (05169)
Intro to Theater (05051)
Printmaking (05160)
Fibers & Textile Design (05164)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)



Intro to Arts, Audio-Visual (A/V) Technology and Communications

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11001
Prerequisite(s)	None
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Foundation Course – Introduction to Arts, Audio-Visual Technology and Communications – Level I Pathway Course
Student Organization	Skills USA, FBLA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia; *Graphic Design
Resources	Local postsecondary institutions, media outlets and online tools

Course Description

Introduction to Arts, A/V Technology & Communication course enables students to understand and critically evaluate the role of media in society. Course content includes investigation of visual images, printed material and audio segments as tools of information, entertainment and propaganda; improvement of presentation and evaluative skills in relation to mass media; recognition of various techniques for delivery of a particular message; and, in some cases, creation of a media product. The course may concentrate on a particular medium within the selected pathway(s).

Program of Study Application

This is a cluster-level course, preparing students to enter any of the following pathways: A/V, Technology, and Film; Journalism and Broadcasting; and the Visual Arts Pathway.

Course Standards

IAC 1: Understand opportunities within Arts, A/V Technology and Communications.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IAC 1.1 Investigate career opportunities in Arts, A/V Technology and Communication occupations.
Two Skill Concept	IAC 1.2 Explore historically significant events in development of specified pathway(s).

IAC 2: Demonstrate proper usage of tools in the Arts, A/V Technology, and Communication cluster.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IAC 2.1 Use hardware associated with career cluster.
Two Skill/Concept	IAC 2.2 Utilize equipment in a proper and safe manner.
Three Strategic Thinking	IAC 2.3 Use software specific to career cluster pathways.
Two Skill/Concept	IAC 2.4 Use appropriate terminology specific to career cluster pathway(s).

IAC 3: Analyze various purposes and individuals' responsibilities within communication fields.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IAC 3.1 Differentiate media messages.
Two Skill/Concept	IAC 3.2 Relate laws and ethics in media.
Three Strategic Thinking	IAC 3.3 Integrate personal responsibility into technological forms of communication.

IAC 4: Apply color theory and visual design principles.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IAC 4.1 Demonstrate understanding of color theory and its impact on art and/or media.
Two Skill/Concept	IAC 4.2 Analyze and describe how composition of art and/or media is affected by use of design principles.

IAC 5: Demonstrate application of professional skills and knowledge.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	IAC 5.1 Using an area of expertise, create a work of self-expression within selected pathway.
Three Strategic Thinking	IAC 5.2 Apply course concepts in industry-based collaboration.



Broadcast Technology

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11103
Prerequisite(s)	None
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology & Communications – Level I pathway course – Broadcast Technology – Level III pathway course – capstone experience.
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Journalism & Broadcasting Pathway Endorsement; *K12 Classroom Technology; *Multimedia; *K12 Educational Technology
Resources	

Course Description

Broadcast Technology explores the ever-changing world of television, radio, entertainment, and commercial video performance. Students gain valuable insight into the careers of broadcast journalism in news, sports, and entertainment. Students will gain industry experience by writing scripts, filming, editing, and producing original performances. Students will work in collaborative teams to produce video projects using relevant A/V equipment and editing software. Special emphasis is placed on creativity, writing, and the editing process.

Program of Study Application

This is a second level pathway course in the Arts, A/V Technology and Communications Career Cluster, Printing Technology/Journalism & Broadcasting; Telecommunications/A/V Technology and Film; and Performing Arts pathways. It is preceded by the Introduction to Arts, A/V Technology, and Communications cluster class. It may be followed up with any pathway level 3 or 4 class and/or a Capstone Experience.

Course Standards

BT 1: Explore career opportunities, copyright laws, ethics, and safety in the broadcast field.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	BT 1.1 Analyze and evaluate various careers in the broadcast field.
Two Skill/Concept	BT 1.2 Distinguish broadcast journalism copyright laws and ethics.
One Recall	BT 1.3 Identify safety concerns in the field of broadcast journalism.
Two Skill Concept	BT 1.4 Practice employability skills in the field of broadcast journalism.

BT 2: Demonstrate proper use and terminology of broadcast equipment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	BT 2.1 Demonstrate understanding of industry terminology.
Two Skill/Concept	BT 2.2 Execute proper use of broadcast equipment.

BT 3: Create original broadcast production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	BT 3.1 Produce media project using broadcasting tools and terminology.
Four Extended Thinking	BT 3.2 Evaluate student broadcasts.

BT 4: Compare and contrast professional broadcasts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	BT 4.1 Evaluate professional broadcasts.



Digital Animation

Career Cluster	Arts, A/V Technology, Communications
Course Code	10207
Prerequisite(s)	Recommended: Introduction To Arts/AV Technology & Communications 11000
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Introduction to Art/AV Technology & Communications – Level I Pathway Course – Digital Animation – Level III Pathway Course
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, Informational Interviews, Tours,
Industry Certifications	Student can work toward Adobe Certified Associate (ACA) Certification in Adobe Products (http://www.adobe.com/education/certification-programs.html), National Career Readiness Test (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; Information Technology Cluster Endorsement; Web & Digital Communication Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia
Resources	Suggested Software: Adobe Suitevtc.com, youtube.com

Course Description

Digital Animation explores Legal and Ethical Issues, Career Opportunities, Use of Animations, Animation Software Tools, Basic Animation Techniques, Interactivity in Animation, and how to Publish Animated Movies.

Program of Study Application

Digital Animation is a Level II pathway course in the Arts, A/V Technology & Communications career cluster that is appropriate for both the Visual Arts and the Telecommunications/AV Technology pathway.

Course Standards

DA 1: Develop an Awareness of Career Opportunities and Professionalism in Digital Animation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DA 1.1 Identify personal interests and abilities related to digital animation careers.
Two Skill/Concept	DA 1.2 Investigate career opportunities, trends, and requirements related to digital animation careers.
Three Strategic Thinking	DA 1.3 Demonstrate job skills for digital animation Industries.
Three Strategic Thinking	DA 1.4 Explore legal and ethical issues related to digital animation.

DA 2: Demonstrate Basic Digital Animation Skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	DA 2.1 Understand animation development process.
Four Extended Thinking	DA 2.2 Create clips using animation software tools.
Four Extended Thinking	DA 2.3 Implement a pre-production plan.
Four Extended Thinking	DA 2.4 Analyze and critique animation production.

DA 3: Employ Standard Convention for the Creation and Design of Animation Concepts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	DA 3.1 Produce basic animation.
Four Extended Thinking	DA 3.2 Generate audio in animation.
Four Extended Thinking	DA 3.3 Design User Interface/Interactivity in animations.
Four Extended Thinking	DA 3.4 Evaluate and analyze animations for publication.



Digital Music Production

Career Cluster	Arts, A/V Technology, Communications
Course Code	11056
Prerequisite(s)	Recommendation only: Introduction to Arts, A/V Technology, and Communications Cluster class and basic music appreciation or musical experience
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Cluster Course – Digital Music Production – Level 2 pathway course – Any Level 3 pathway course, Level 4 pathway course, or Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Field trips, guest speakers, Internships, Job Shadows, Conference calls with Industry leaders, Industry Leader critiques
Industry Certifications	National Career Readiness Certificate
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Audio Video Technology Pathway Endorsement; *Multimedia
Resources	Websites include: • Bassgorilla (tutorials) - https://bassgorilla.com/ • Digital Harbor High School Music Technology - https://sites.google.com/site/dhhsmusictechnology/music-curriculum • Digital Music Association - http://www.digmedia.org/issues-and-policy/copyright-and-royalties/139-copyright-in-music • Foley – www.Marblehead.net/foley/jack.html • Health/Safety - http://www.airsworld.com/blog/posts/2014/november/health-and-safety-in-the-music-events-industry/#.V2vjpVexqYU • John Muir Middle School Digital Music Program - http://www.sjUSD.org/schools/john_muir/Pages/music/digital_music_program.html • Music Genre Lists - http://www.musicgenreslist.com/ • Music Theory - http://tobyrrush.com/theorypages/ • Music.tutsplus.com • Social Media for Teachers - http://www.edutopia.org/blog/social-media-resources-educators-matt-davis • Soundcloud.com

	● Teaching Copyright – https://www.teachingcopyright.org/ ● US Copyright Office - http://copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf Online publications: ● DigitalMusicNews.com ● Pcmag.com When looking for a Digital Audio Workstation (DAW), look for guides such as "The Ultimate Guide to DAW Software for 2015" (www.ehomerecordingstudio.com/best-daw-software/). Youtube is an excellent resource for all different types of tutorials.
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Course Description

The Digital Music Production course provides students with the basic knowledge and technical skills needed to prepare them for postsecondary study or entry-level employment in the Digital Music Production industry. Students will develop knowledge of the business of music, music copyright laws and ethics, studio recording, basic music theory needed to create music, and the creation and performance of electronic music.

Program of Study Application

This is a secondary level pathway class in the Arts, A/V Technology and Communications Career Cluster, Telecommunications/A-V Technology or Journalism and Broadcasting Pathway. It is preceded by the Introduction to Arts, A/V Technology, and Communications cluster class. It may be followed up with any pathway level 3 or 4 class or a Capstone Experience.

Course Standards

DMP 1: Discuss careers in digital music and audio production.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	DMP 1.1 Identify opportunities and occupations in the field of digital music.
Three Strategic Thinking	DMP 1.2 Demonstrate personal musical knowledge and interests.
Three Strategic Thinking	DMP 1.3 Examine music copyright laws and ethics.
One Recall	DMP 1.4 Identify safety concerns and soft skills in the field of digital music.

DMP 2: Analyze digital audio production equipment & software.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	DMP 2.1 Examine the process of basic sound recording and capturing.
Four Extended Thinking	DMP 2.2 Analyze recorded, live music, and computer-generated music for technical and aesthetic quality.

DMP 3: Create digital music.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	DMP 3.1 Integrate basic music structure.
Two Skill/Concept	DMP 3.2 Distinguish appropriate audio production software, equipment, and techniques.
Four Extended Thinking	DMP 3.3 Generate audio (music, sound effects, vocal work) separately for use in musical piece.
Four Extended Thinking	DMP 3.4 Construct layered digital music for publication or performance.

DMP 4: Perform Digital Music.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	DMP 4.1 Perform or demonstrate personally created music in front of a live audience.
Four Extended Thinking	DMP 4.2 Analyze and evaluate personally created music performances.
Four Extended Thinking	DMP 4.3 Analyze the venue and audience for appropriate presentation of performance .



Digital Production for Entertainment

Career Cluster	Arts, A/V Technology, Communications
Course Code	11153
Prerequisite(s)	Algebra I or Programming I
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology & Communications – Level I pathway course – Level II pathway course – Level III pathway course – Digital Production for Entertainment – capstone experience
Student Organization	SkillsUSA, Local University Program Development Competitions (PDC)
Coordinating Work-Based Learning	Guest Speakers, Field Trips, Informational Interviews, Tours,
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; Information Technology Cluster Endorsement; Web & Digital Communication Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia
Resources	Examples of Software Environments and Languages: Visual Studio/Basic, C++, Java, Alice, etc.

Course Description

Digital Production for Entertainment prepares students to extend their knowledge of computer programming and design. Students will be given opportunities to design, implement, and present meaningful entertainment through a variety of media.

Program of Study Application

Digital Production for Entertainment is a Level IV pathway course appropriate for two pathways in the Arts/AV Technology & Communications cluster: Telecommunications/A/V Technology and Visual Arts.

Course Standards

DPE 1: Develop an Awareness of Opportunities and Professionalism in Digital Entertainment careers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DPE 1.1 Identify personal interests and abilities related to careers in digital entertainment.
Two Skill/Concept	DPE 1.2 Investigate opportunities, trends, and requirements related to careers in digital entertainment.
Three Strategic Thinking	DPE 1.3 Demonstrate job skills for digital entertainment Industries.
Three Strategic Thinking	DPE 1.4 Explore legal and ethical issues related to digital entertainment.

DPE 2: Identify and Analyze Basic Entertainment Design Elements.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DPE 2.1 Explore basic entertainment design elements.
Two Skill/Concept	DPE 2.2 Explore the fundamentals of entertainment art.

DPE 3: Create and Design Entertainment Projects.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	DPE 3.1 Design and implement procedures and timelines.
Four Extended Thinking	DPE 3.2 Develop digital production components and resources.

DPE 4: Demonstrate Knowledge of Software Development processes.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	DPE 4.1 Identify and Utilize software development methodology.
Two Skill/Concept	DPE 4.2 Utilize tools for developing software applications.
Three Strategic Thinking	DPE 4.3 Apply language specific programming tools/techniques.

DPE 5: Identify and Utilize a Programming Environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	DPE 5.1 Develop an application using selected programming language or software.
Four Extended Thinking	DPE 5.2 Evaluate and Troubleshoot an application for distribution.



Graphic Design I

Career Cluster	Arts, A/V Technology, Communications
Course Code	11155
Prerequisite(s)	Recommended: Introduction To Arts/AV Technology & Communications 11000
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Introduction to Art/AV Technology & Communications – Level I Pathway Course – Graphic Design I - Level III Pathway Course
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, Informational Interviews, Tours
Industry Certifications	Student can work toward Adobe Certified Associate (ACA) Certification in Adobe Products (http://www.adobe.com/education/certification-programs.html), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Information Technology Cluster Endorsement; Web & Digital Communication Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology
Resources	Suggested Software: Adobe Photoshop, Illustrator, Pixlar, etc.

Course Description

Graphic Design I explores Legal and Ethical Issues, Career Opportunities, Fundamentals of Computer Graphics, Raster or Vector Graphics, Tools Used to Create Graphics, 2D & 3D Basic Animations.

Program of Study Application

Graphic Design I is a Level II pathway course in the Arts/AV Technology & Communications cluster, A/V, Technology, and Film; Journalism and Broadcasting; and the Visual Arts Pathway.

Course Standards

GD 1: Develop an Awareness of Career Opportunities and Professionalism in Graphic Design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	GD 1.1 Identify personal interests and abilities related to graphic design careers.
Two Skill/Concept	GD 1.2 Investigate career opportunities, trends and requirements related to graphic design careers.
Three Strategic Thinking	GD 1.3 Demonstrate employability skills for graphic design industries.
Three Strategic Thinking	GD 1.4 Explore legal and ethical issues related to graphic design.
Four Extended Thinking	GD 1.5 Apply ADA compliance in graphic design.

GD 2 Explore fundamentals related to graphic design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	GD 2.1 Illustrate the use of computer graphics.
One Recall	GD 2.2 Identify graphic design concepts.
Three Strategic Thinking	GD 2.3 Differentiate 2D and 3D graphic design concepts.
Four Extended Thinking	GD 2.4 Utilize color technologies.

GD 3: Create Graphic Designs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	GD 3.1 Explore hardware and software utilized in graphic design.
Four Extended Thinking	GD 3.2 Implement graphic design software.

GD 4: Identify and Utilize a Graphic Design Environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	GD 4.1 Construct transformation of graphics.
Four Extended Thinking	GD 4.2 Construct animations of graphics.
Four Extended Thinking	GD 4.3 Create graphic design products.



Graphic Design II

Career Cluster	Arts, A/V Technology, Communications
Course Code	11154
Prerequisite(s)	Recommended: Introduction to Arts/AV Technology & Communications 11000, Graphic Design I 10202
Credit	0.5 credit
Program of Study and Sequence	Introduction to Art/AV Technology & Communications – Graphic Design I – Graphic Design II – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, Informational Interviews, Tours
Industry Certifications	Student can work toward Adobe Certified Associate (ACA) Certification in Adobe Products (http://www.adobe.com/education/certification-programs.html), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Information Technology Cluster Endorsement; Web & Digital Communications Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology
Resources	Suggested Software: Adobe Photoshop, Illustrator, In design, Pixlar, etc.

Course Description

Graphic Design II explores legal and ethical issues, career opportunities, graphic design methods, design elements, design principles, page layout, typography, color theory, creating media and forms of published media.

Program of Study Application

Graphic Design II is a Level III pathway course in the Arts, A/V Technology and Communications career cluster appropriate for three pathways: A/V, Technology, and Film; Journalism and Broadcasting; and the Visual Arts Pathway. Completion of Graphic Design II will prepare a student for a Level IV course or capstone experience.

Course Standards

GD 2-1: Develop an Awareness of Career Opportunities and Professionalism in Graphic Design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	GD2 1.1 Evaluate growth in abilities and skills related to graphic design careers.
Three Strategic Thinking	GD2 1.2 Investigate career opportunities, emerging technologies and requirements related to graphic design careers.
Three Strategic Thinking	GD2 1.3 Demonstrate employability skills for graphic design industries.
Three Strategic Thinking	GD2 1.4 Critique legal and ethical issues related to graphic design.
Four Extended Thinking	GD2 1.5 Apply ADA compliance in graphic design.

GD 2-2: Apply design fundamentals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	GD2 2.1 Execute color theory.
Four Extended Thinking	GD2 2.2 Implement the principles of design.

GD 2-3: Apply techniques used in creating print media.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	GD2 3.1 Evaluate various printing methods.
Three Strategic Thinking	GD2 3.2 Demonstrate typography techniques.
Four Extended Thinking	GD2 3.3 Apply page layout techniques.

GD 2-4: Design a graphic media project.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	GD2 4.1 Utilize graphic design business processes.
Four Extended Thinking	GD2 4.2 Implement use of tools used to create graphic media.

GD 2-5: Create a graphic media product.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	GD2 5.1 Evaluate types of materials for various graphic design products. Identify and describe the differences among watercolor, oil and acrylic.
Three Strategic Thinking	GD2 5.2 Publish printed or digital media.



Journalistic Design

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11106
Prerequisite(s)	Recommended – Intro. to Art, A/V and Communications
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Intro to Arts, Audio Visual Technology and Communications – Journalistic Design – Photography I – Multimedia Design – Media Production, Capstone Experience
Student Organization	Skills USA, FBLA
Coordinating Work-Based Learning	Field trips, guest speakers, advisory board, job shadowing
Industry Certifications	Adobe ACA, National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia
Resources	Local postsecondary institutions, media outlets and online tools, https://www.nationalgeographic.org/education/professional-development/courses/storytelling-for-impact/

Course Description

Journalistic Design provides students with opportunities to gain insight into technology tools, client expectations and publication procedures. Individuals will explore artistic techniques to effectively communicate ideas and information to selected audiences through digital and printed media. Students will learn fundamentals and tools used to create and manipulate digital graphics. Topics will emphasize career exploration, concept design, tools and various forms of publishing media. The course may concentrate on a particular medium within the selected pathway(s).

Program of Study Application

This course is a Level I pathway course that will prepare a student to successfully enter advanced work in any of the Arts, AV Technology, and Communications pathways.

Course Standards

JD 1: Explore career opportunities within journalism.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	JD 1.1 Investigate career opportunities.
Two Skill Concept	JD 1.2 Explain skills needed for journalism.

JD 2: Explore and practice skills of journalistic writing.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	JD 2.1 Identify facets of journalistic writing.
Two Skill/Concept	JD 2.2 Explore publishing writing styles.
Two Skill/Concept	JD 2.3 Demonstrate appropriate interview skills.

JD 3: Analyze elements of design.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	JD 3.1 Identify design elements.
Two Skill/Concept	JD3.2 Analyze principles of typography used in design.
Three Strategic Thinking	JD 3.3 Analyze design and layout.
Three Strategic Thinking	JD 3.4 Apply page layout techniques.

JD 4: Apply journalistic design principles and ethical fundamentals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	JD 4.1 Explain legal and ethical issues related to publication, design and broadcast.
Three Strategic Thinking	JD 4.2 Interpret design elements.
Three Strategic Thinking	JD 4.3 Implement design principles.

JD 5: Create computer-generated graphics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	JD 5.1 Investigate journalism and broadcast software and hardware.
Two Skill/Concept	JD 5.2 Modify images to meet publication broadcast needs.

JD 6: Explore and apply photography and videography techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	JD 6.1 Investigate characteristics of composition.
Three Strategic Thinking	JD 6.2 Explore camera settings and equipment to obtain desired images.

JD 7: Produce pathway-specific media.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	JD 7.1 Plan out design process in working with client.
Two Skill/Concept	JD 7.2 Determine production roles.
Four Extended Thinking	JD 7.3 Create and critique production piece.



Media Production

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11151
Prerequisite(s)	Recommend: Multi-Media Design
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology & Communications – Multimedia Design – Media Production – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, Informational Interviews, Tours
Industry Certifications	Student can work toward Adobe Certified Associate(ACA) Certification in Adobe Products (http://www.adobe.com/education/certification-programs.html), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia
Resources	ISMFilms.com, vtc.com, youtube.com

Course Description

Media Production focuses on technical skills and knowledge in all phases of media production. Students will also explore equipment operation, software applications, careers, social networking and media law.

Program of Study Application

Media Production is a Level IV pathway course appropriate for all Arts, AV Technology, and Communications pathways. It is recommended that Media Production would be preceded by Multimedia Design. Completion of Media Production would prepare a student for a capstone experience.

Course Standards

MP 1: Develop an awareness of career opportunities and employability skills in media production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MP 1.1 Identify personal interests and abilities related to media production careers
Two Skill/Concept	MP 1.2 Investigate career opportunities, trends and requirements related to media production careers
Three Strategic Thinking	MP 1.3 Demonstrate employability skills required by business and industry
Three Strategic Thinking	MP 1.4 Describe and apply principles of media law

MP 2: Evaluate validity, credibility and bias of information in media.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	MP 2.1 Evaluate web-based social networks
Two Skill/Concept	MP 2.2 Categorize digital media communication
Three Strategic Thinking	MP 2.3 Evaluate cultural impact of information in the media

MP 3: Exhibit basic skills in operating production equipment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MP 3.1 Demonstrate skills and safety procedures used in video production

MP 4: Produce media for distribution using phases of production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	MP 4.1 Design and connect production plans, techniques and roles
Three Strategic Thinking	MP 4.2 Utilize production plan to capture raw media footage
Four Extended Thinking	MP 4.3 Produce a final media project using editing software
Three Strategic Thinking	MP 4.4 Prepare finished production for distribution via desired medium



Multimedia Design

Career Cluster	Arts, A/V Technology, & Communications
Course Code	10203
Prerequisite(s)	None
Credit	0.5 to 1.0 Credit
Program of Study and Sequence	Intro to Arts, A/V Technology & Communications – Visual Communications or Journalistic Design – Photography I – Multimedia Design – Media Production
Student Organization	Skills USA, FBLA
Coordinating Work-Based Learning	Field trips, guest speakers, advisory board, job shadowing
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; Business Management & Administration Cluster Endorsement; Information Technology Cluster Endorsement; Web & Digital Communication Pathway Endorsement; Sales, Merchandising & Marketing Research Support Pathway Endorsement; Marketing Cluster Endorsement; *K12 Classroom Technology; *K12 Educational Technology; *Multimedia
Resources	Local postsecondary institutions, media outlets and online tools

Course Description

Multimedia Design gives students experience and knowledge in all forms of mixed media and content. Multimedia presentations combine text, graphics, animation, images and sound from a wide range of media, such as films, newspapers, magazines, online information, television, videos, streaming and electronic media-generated images. Students will learn how to select the appropriate medium for each element of the presentation and gauge the needs of clients and the intended audience. In addition to their general academic and technical knowledge and skills, students gain an understanding of career opportunities available in technology and what employers require to gain and maintain employment in these careers. The course may concentrate on a particular medium within the selected pathway(s).

Program of Study Application

Multimedia Design is a level III pathway course in the Arts, A/V Technology and Communications career cluster.

Course Standards

MD 1: Explore career opportunities in multimedia.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MD 1.1 Summarize multimedia career opportunities
Two Skill/Concept	MD 1.2 Explain professional behaviors, skills and abilities needed for multimedia careers
Three Strategic Thinking	MD 1.3 Recognize levels of quality in multimedia based on industry standards

MD 2: Explore fundamentals within multimedia collaboration.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MD 2.1 Interpret use of multimedia in everyday life
Two Skill/Concept	MD 2.2 Interpret design layout to reflect client expectations
Three Strategic Thinking	MD 2.3 Demonstrate appropriate use of multimedia tools
Two Skill/Concept	MD 2.4 Apply proper operation and maintenance procedures for equipment

MD 3: Organize multimedia projects.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MD 3.1 Outline customer requirements
Four Extended Thinking	MD 3.2 Construct a multimedia plan
Two Skill/Concept	MD 3.3 Categorize project tasks into tools, techniques and personnel

MD 4: Create a multimedia project based on current industry standards.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	MD 4.1 Construct multimedia projects based on developed plans
Four Extended Thinking	MD 4.2 Analyze multimedia presentation



Photography I

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11054
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology and Communication – Photography I – Photography II – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Local photographers, newspapers/publishing company, school based photography business, local nursing home to take portraits
Industry Certifications	Working toward ACA certification in Adobe Photoshop, National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; *Multimedia
Resources	

Course Description

In Photography I, students will be able to apply principles of visual literacy to produce visual content. This gives students an advantage in today's global, multimedia society. Students will learn industry-relevant technical skills and have the opportunity to work with a variety of technology, including digital cameras, design software, and editing tools to stage, shoot, process, print, and present professional-grade images. Students will evaluate and critique photographic work and investigate the history of photography.

Program of Study Application

Photography I is a Level 2 pathway course in the Arts, A/V Technology and Communications cluster, Journalism & Broadcasting; Telecommunications/A-V Technology; and Visual Arts pathways. Photography I would be preceded by a level I course. Completion of Photography I would prepare a student to successfully participate in Photography II.

Course Standards

P1-1: Explore opportunities in photographic arts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	P1-1.1 Explore career opportunities in the area of photography and photojournalism.

P1-2: Examine fundamentals related to photographic arts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	P1-2.1 Classify digital cameras and accessories for intended use.
Four Extended Thinking	P1-2.2 Implement digital darkroom management practices.
Two Skill/Concept	P1-2.3 Differentiate legal and copyright issues related to photography and photojournalism.

P1-3: Analyze camera operations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	P1-3.1 Implement appropriate care, maintenance, and safety related to the operation of a digital camera.
Four Extended Thinking	P1-3.2 Analyze the effect of exposure on the quality of photographs.
Two Skill/Concept	P1-3.3 Analyze how techniques impact the quality of photographs.

P1-4: Evaluate photographs for effective composition.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	P1-4.1 Critique photographs for effective use of the elements of composition.
Three Strategic Thinking	P1-4.2 Check light and color to produce effective photographs.

P1-5: Create artistic photographs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	P1-5.1 Implement the use of image editing software for manipulation of photographs.
Four Extended Thinking	P1-5.2 Produce photographs for visual display. Create a portfolio of photographs that illustrates each of the elements of composition.



Photography II

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11052
Prerequisite(s)	Photography I
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology and Communication – Photography I – Photography II – Capstone Experience
Student Organization	Skills USA, HOSA
Coordinating Work-Based Learning	Local photographers, newspapers/publishing company, school based photography business, local nursing home to take portraits
Industry Certifications	Work toward ACA certification in Adobe Photoshop National Career Readiness Certificate
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; *Multimedia
Resources	Skills USA, Photography PDT Program, Professional Photographers of America, National Press Photographers Association

Course Description

Photography II provides the advanced photography student with practical knowledge and highly advanced skills for a comprehensive career in photography. Students will explore advanced lighting and editing techniques and the commercial distribution of photographic works.

Program of Study Application

Photography II is a Level III course in the Arts, A/V Technology, Communications career cluster, Journalism & Broadcasting; Telecommunications/A-V Technology; or Visual Arts pathways. Photography I is a prerequisite for this course. Completion of Photography II would prepare a student to successfully participate in a level IV course or capstone experience.

Course Standards

P2-1: Explore opportunities in commercial photography.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	P2 1.1 Plan for employment and entrepreneurial endeavors in commercial photography.
Two Skill/Concept	P2 1.2 Demonstrate interpersonal skills essential to workplace success.
One Recall	P2 1.3 Identify basic resources commonly used in the photography industry.

P2-2: Exhibit legal and ethical conduct.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	P2 2.1 Evaluate professional codes of conduct.
Two Skill/Concept	P2 2.2 Demonstrate personal professionalism related to commercial photography.

P2-3: Evaluate photographic techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	P2 3.1 Analyze how the combination of camera settings and desired aesthetics influence the creation of a photograph.
Three Strategic Thinking	P2 3.2 Evaluate how camera accessories are used to produce commercial photography.
Two Skill/Concept	P2 3.3 Demonstrate proficiency in using advanced lighting techniques.

P2-4: Evaluate photographs for effective composition.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	P2 4.1 Apply professional aesthetics to compositional elements in photographs.
Four Extended Thinking	P2 4.2 Critique photographs to a professional standard.

P2-5: Create commercial photographic products.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	P2 5.1 Demonstrate advanced proficiency in digital darkroom software.
Three Strategic Thinking	P2 5.2 Demonstrate use of evaluation techniques for professional portfolios.



Production Technology

Career Cluster	Arts, A/V Technology, & Communications
Course Code	11160
Prerequisite(s)	Recommended prerequisite courses: Intro to Arts, AV Tech & Communication
Credit	0.5 to 1.0 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology & Communications – Production Technology–pathway courses – Capstone Experience
Student Organization	International Thespian Association, United States Institute for Theatre Technology, Educational Theatre Association, Skills USA
Coordinating Work-Based Learning	School drama department; community theatre; non-profit organizations such as The Cave (Rapid City); religious organizations
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology Cluster Endorsement; Visual Arts Pathway Endorsement
Resources	Local postsecondary institutions, Standard Hyperlinks

Course Description

Production Technology introduces the student to the fundamental elements and principles of technical productions through applied learning that makes use of production facilities, operations, methods, and technologies used in professional, amateur, and educational theaters and production studios. The course includes a brief history of technical theatre and broadcast media. Students will learn the functions of the creative team, production staff, technicians and stage crew. Basic elements of scenic construction, design concepts, theatrical lighting, sound technologies, and production management will be introduced and assessed through practical application.

Program of Study Application

Production Technology is a level II course in the Arts, A/V Technology & Communications career cluster. Production Technology pertains to all three career pathways: Journalism and Broadcasting; Telecommunications/A-V Technology; Visual/Performance Arts.

Course Standards

PT 1: Identify the components of the performance space and potential safety hazards.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PT 1.1 Explore, label, and define usage of all areas adjacent to the stage and within the performance space.
One Recall	PT 1.2 Identify all areas and equipment in a performance area that have potential to cause harm.

PT 2: Examine applications of past and present forms of technology in performing arts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	PT 2.1 Compare and contrast historical and contemporary performance spaces.
Two Skill/Concept	PT 2.2 Identify and define the properties of different performance spaces.

PT 3: Describe career possibilities in technical production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PT 3.1 Research job titles and duties for technical personnel.
Two Skill/Concept	PT 3.2 Demonstrate and practice basic crew functions.

PT 4: Analyze scripts collaboratively with production crew for understanding of performance design and technical needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PT 4.1 Identify specific cues for sound, lighting, and set derived from action or dialogue in the text.
Three Strategic Thinking	PT 4.2 Determine choices of production color and style which reflect intended mood, environment, and era.

PT 5: Plan scenic elements and set construction.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PT 5.1 Identify industry terminology for scene design and construction.
Three Strategic Thinking	PT 5.2 Design and create a floor plan for a specific production.
Two Skill/Concept	PT 5.3 Demonstrate safety procedures for operation, maintenance, and storage of set construction items and tools.

PT 6: Construct various elements of sets according to industry standards.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	PT 6.1 Evaluate the function and application of framed scenery and build suitable set pieces.
Three Strategic Thinking	PT 6.2 Design and construct weight-bearing scenic units.
Two Skill/Concept	PT 6.3 Apply knowledge of installation and rigging techniques to securely join set pieces.
Two Skill/Concept	PT 6.4 Demonstrate various elements of scenic art.

PT 7: Design practical applications for lighting and sound.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PT 7.1 Identify and recall names of common lighting instruments.
Three Strategic Thinking	PT 7.2 Design lighting plot for screenplay or script.
Two Skill/Concept	PT 7.3 Demonstrate proper procedure for hanging and focusing lighting instruments.
Three Strategic Thinking	PT 7.4 Develop sound design for production.
Two Skill/Concept	PT 7.5 Observe and apply knowledge of sound and light board operation.



Visual Media Design

Career Cluster	Arts, Audio-Visual Technology & Communications
Course Code	05162
Prerequisite(s)	Intro to Arts/AV and Communications
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology and Communications – Visual Media Design – pathway course – Capstone Experience
Student Organization	None
Coordinating Work-Based Learning	Guest Speakers, Field Trips
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology and Communications Cluster Endorsement; Visual Arts Pathway Endorsement
Resources	

Course Description

Visual Media Design examines the topics of theory, two-dimensional graphic design, environmental graphic design, typography, illustration, photographic illustration and interactive media. Introduction is presented regarding how and why professionals in the field of visual communication create meaning and context through their work. Students explore the language of visual communication, how communication is influenced by form, content and context.

Program of Study Application

Visual Media Design is a Level I Pathway Course in the A/V, Technology, and Film; Journalism and Broadcasting; and the Visual Arts Pathway. Visual Media Design will prepare a student to enter a Level II pathway course in any of the Arts, A/V Tech and Communications pathways.

Course Standards

VC 1: Explore careers and employability skills in the commercial visual arts.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	VC 1.1 Demonstrate knowledge of the careers available in the visual communications industry.
Two Skill/Concept	VC 1.2 Examine and critique composition of professional portfolios.

VC 2: Apply elements of art and principles of design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	VC 2.1 Utilize elements of art in visual communications.
Two Skill/Concept	VC 2.2 Utilize the principles of design in visual communications.

VC 3: Demonstrate effective use of typography.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	VC 3.1 Identify common typography terminology used in typography.
Two Skill/Concept	VC 3.2 Understand the use, and application and psychological impact of typography in visual communication.

VC 4: Utilize methods and materials used in visual media design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	VC 4.1 Explore methods used in 2D/3D visual communications.
Two Skill/Concept	VC 4.2 Explore materials used in 2D/3D visual communications.
Two Skill/Concept	VC 4.3 Explore emerging techniques and technology in visual communications.
Three Strategic Thinking	VC 4.4 Create visual communications media.

VC 5: Demonstrate safe practice and ethics in visual media design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	VC 5.1 Demonstrate safe practices in a work environment.
One Recall	VC 5.2 Define legal issues and their impact on visual communications and creators.
Two Skill/Concept	VC 5.3 Practice correct copyright usage.



Fashion Design

Career Cluster	Arts, A/V Technology, Communications
Course Code	19201
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts/AV Technology and Communications – Level 1 pathway course – Fashion Design – Level 3 pathway course – Capstone Experience
Student Organization	FCCLA
Coordinating Work-Based Learning	Field trip, industry-personnel interviews
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; FACS Endorsement; *Family and Consumer Science Education
Resources	FCCLA Fashion Design, Fashion Construction, and Repurpose and Redesign STAR Event, FCCLA Fashion Sketch Skill Demonstration Event, Institute of Design and Technology of South Dakota

Course Description

Fashion Design is an applied knowledge course intended to help students explore different aspects of careers in the fashion design industry. Students will study the history of the fashion industry, elements and principles of design, textile composition, and fashion illustration. Students will explore trends in fashion design and engage with industry specific technology used to produce fabrics and create fashion lines.

Program of Study Application

Fashion Design is a Level 2 pathway course in the Arts, A/V Technology and Communication cluster, visual arts pathway, capstone.

Course Standards

FD 1: Explore career opportunities in the fashion industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FD 1.1 Research career opportunities and pathways in fashion design and related industries.
Four Extended Thinking	FD 1.2 Analyze industry standard skills needed in the fashion design industry.

FD 2: Analyze the relationship between history and fashion.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FD 2.1 Interpret the influences of art and media on fashion.
Three Strategic Thinking	FD 2.2 Differentiate how politics, society, economics, culture, and aesthetics influence fashion.

FD 3: Evaluate performance characteristics of textiles and textile products

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FD 3.1 Classify clothing details used to recognize, understand, and interpret fashion.
Three Strategic Thinking	FD 3.2 Evaluate fibers, yarns, fabrics and finishes for end use.

FD 4: Demonstrate fashion design skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FD 4.1 Create fashion designs incorporating the elements and principles of design.
Three Strategic Thinking	FD 4.2 Critique how color theory and color forecasting impact fashion design.
Four Extended Thinking	FD 4.3 Create a fashion line.



Interior Design I

Career Cluster	Arts, A/V Technology, Communications
Course Code	19205
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology, and Communication – Interior Design I – advanced pathway course – Capstone Course
Student Organization	FCCLA
Coordinating Work-Based Learning	Professional interviews, tours of homes
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; FACS Endorsement; Family and Consumer Science Education
Resources	International Interior Design Association (IIDA); American Society of Interior Designers (ASID); FCCLA Interior Design, Professional Presentation, Repurpose and Redesign STAR Event and Interior Design Sketch Skill Event

Course Description

Interior Design I provide students with an introduction to interior design. Students learn to create impact using the elements and principles of design. Areas of study include understanding both personal and clients wants and needs, housing options, design styles, furniture arrangement, floor plan evaluation, space planning, project presentation and interior design related careers.

Program of Study Application

Interior Design I is a Level 2 pathway course in the Arts, A/V Technology and Communication career cluster, Visual Arts pathways.

Course Standards

FID 1: Explore career opportunities and professional practices in interior design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FID 1.1 Research career opportunities and pathways in interior design.
Two Skill Concept	FID 1.2 Analyze industry standards skills needed in interior design.

FID 2: Analyze the relationship between history and current trends in interior design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FID 2.1 Explain the influence of history on interior design.
Two Skill/Concept	FID 2.2 Describe current trends in the interior design profession.

FID 3: Apply design elements and principles in interior design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FID 3.1 Analyze the effect and application of elements of design in interior design.
Two Skill/Concept	FID 3.2 Analyze the effect and application of principles of design in interior design.

FID 4: Investigate design and function of interior spaces.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FID 4.1 Demonstrate space and floor planning skills.
Two Skill/Concept	FID 4.2 Examine floor plans, elevation drawings and scale drawings for interior space.

FID 5: Critique items used in creating interior environments.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FID 5.1 Compare characteristics of the components of the interior environments.
Three Strategic Thinking	FID 5.2 Distinguish key features of architectural structural elements.
Two Skill/Concept	FID 5.3 Formulate guidelines for selection of furniture.

FID 6: Apply Interior design project and presentation skills

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FID 6.1 Analyze clients' needs.
Two Skill/Concept	FID 6.2 Describe the basic components of project budgets used in interior design proposals.
One	FID 6.3 Present interior design proposal to clients.

Recall	
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Interior Design II

Career Cluster	Arts, A/V Technology, & Communications
Course Code	19206
Prerequisite(s)	Interior Design I
Credit	0.5 credit
Program of Study and Sequence	Introduction to Arts, A/V Technology and Communication – Level I pathway course – Interior Design I – Interior Design II – Level IV pathway course or capstone experience
Student Organization	FCCLA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Arts AV Technology & Communications Cluster Endorsement; Visual Arts Pathway Endorsement; FACS Endorsement; *Family and Consumer Science Education
Resources	International Interior Design Association (IIDA); American Society of Interior Designers (ASID); FCCLA Interior Design and Repurpose and Redesign STAR Event

Course Description

Interior Design II is an applied-knowledge course intended to prepare students for careers in the interior design industry. Students in Interior Design II will create a design for a specific space and purpose, either residential or commercial, applying skills and knowledge from previous courses using industry-specific technologies.

Program of Study Application

Interior Design II is a level three course in the Arts, A/V Technology, Communications career cluster, Visual Arts pathways. Interior Design I is a prerequisite for this course. Participation in Interior Design II would prepare a student to participate in a level IV pathway course or capstone experience.

Course Standards

ID2-1: Analyze opportunities and professional practices in interior design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ID2 1.1 Investigate employment and entrepreneurial endeavors in interior design.
Two Skill/Concept	ID2 1.2 Describe credentials and licensing requirements for interior designers.
Three Strategic Thinking	ID2 1.3 Critique professional codes of ethics.

ID2-2: Investigate safe and sustainable practices in the interior design profession.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ID2 2.1 Demonstrate personal and environmental safety practices.
Two Skill/Concept	ID2 2.2 Describe Occupational Safety and Health Administration (OSHA) policies and regulations related to the interior design profession.
Three Strategic Thinking	ID2 2.3 Integrate sustainable and universal design practices.
Two Skill/Concept	ID2 2.4 Explain legislation, regulations, and public policy that affect interior design.

ID2- 3: Differentiate residential interior design and commercial interior design.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ID2 5.1 Compare and contrast the fields of residential interior design and commercial interior design.
Three Strategic Thinking	ID2 5.2 Compare space planning techniques and practices for commercial interior design and residential interior design.

ID2-4: Investigate design processes and project management.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	ID2 4.1 Apply the design process to interior design scenarios.
One Recall	ID2 4.2 Identify the designer's role in successful project management.
Four Extended Thinking	ID2 4.3 Create a plan to meet proposal requirements.

Foundational CTE Courses

Career Exploration (22151) Employability (22152) Entrepreneurship (12053) Workplace Technology Skills (10004) Leadership & Service (22101)

Cluster Courses

Introduction to Business (12051^)
International Business & Marketing (12056)

Personal Finance (19262^)
Entrepreneurial Skills (12061)

Marketing Principles (12164)
Business Economics (12105)

Pathway Courses

<i>Business Administration Pathway</i>	<i>Business Accounting Pathway</i>	<i>Administrative Support Pathway</i>
Business Law (12054) Business Management (12052)	Accounting I (12104^) Advanced Accounting (12108) Accounting II (12109)	Business Computer Applications (10005^) Advanced Business Computer Applications (10049)

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Business Management & Administration Career Cluster.

Academic CTE Courses

Algebra I (02052^)
Probability & Statistics (02201)
Psychology (04254^)
Sociology (04258^)
Economics (04201^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^)
Youth Apprenticeship (80020) Service Learning Experience (22104) Youth Internships (80018^)



Introduction to Business

Career Cluster	Business Management and Administration
Course Code	12051
Prerequisite(s)	Introduction to Business (Recommended)
Credit	0.5 to 1.0
Program of Study and Sequence	Foundational Course – Introduction to Business – Pathway Course
Student Organization	Future Business Leaders of America (FBLA), DECA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, and Tours
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; Marketing Cluster Endorsement; *Business Ed.
Resources	N/A

Course Description

Introduction to Business exposes students to the world of business, including the concepts, functions, and skills required for meeting the challenges of operating a business on a local, national, and international scale. The course will introduce all aspects of business: domestic economics in a global society, financial principles, marketing, management strategies, administrative and information systems, ethics, and organizational and professional leadership. Students will analyze the elements of the business environment and focus on attitudinal and problem-solving skills inherent to success.

Program of Study Application

Introduction to Business is a cluster course in the Business Management and Administration career cluster. Successful completion will prepare a student to enter a pathway course in any of the Business Management and Administration career pathways.

Course Standards

IB 1: Students will identify skills needed to be successful in the global economic environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IB 1.1 Explain the terms economics and economic activity. ● Explain how limited resources affect business ● Explain factors which affect supply and demand ● Explain concepts of economic resources ● Identify economic indicators to detect economic trends and conditions ● Explain the nature of global trade ● Compare and contrast the different types of economic systems ● Explain how economic systems answer the basic economic questions
One Recall	IB 1.2 Explain businesses' roles in a global society. ● Explain ways in which businesses interact with society ● Describe different ways our government intervenes in and/or regulates business ● Explain the nature of labor unions
One Recall	IB 1.3 Discuss career choices in economics.

IB 2: Students will compare the different forms of business organizations and management styles.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IB 2.1 Compare and contrast different forms of business organizations. ● Discuss common forms of business ownership ● Explain factors that affect the selection of ownership
Three Strategic Thinking	IB 2.2 Differentiate among different management styles and human resource procedures. ● Examine management strategies to improve performance and competitive advantages of an organization ● Determine human resources management legal responsibility in maintaining labor relations ● Determine proper human resources procedures for managing employees
Two Skill/Concept	IB 2.3 Explore professional and ethical leadership styles. ● Model professional leadership styles ● Address ethical dilemmas
Two Skill/Concept	IB 2.4 Explore careers in business organizations and through business ownership.

IB 3: Students will apply concepts of marketing, business finances and technology in the operation of a business.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IB 3.1 Demonstrate marketing principles involved in business operations. ● Describe factors that influence customer-business relationships ● Identify the elements of the marketing mix ● Explain the effects of competition in a free enterprise system

	● Explore careers in marketing and sales fields
One Recall	IB 3.2 Describe roles technology plays in business operations. ● Identify information technologies commonly used in business operations ● Discuss how information technology impacts business operations ● Discuss how technologies apply to trends in information systems ● Discuss technology careers available within business organizations
Two Skill/Concept	IB 3.3 Explain the financial process needed to start and operate a business. ● Recognize the need for a business plan ● Recognize the importance of maintaining accurate business records using acceptable accounting processes ● Recognize the importance of utilizing information available to make sound decisions in operating a business ● Explain the importance of the profit motive ● Explore finance careers available within business organizations

IB 4: Students will evaluate: roles individuals play as consumers in the economy, financial management concepts, and careers in financial management.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IB 4.1 Demonstrate how important a consumer is in the global economy. ● Apply the steps in a rational decision-making process to a situation involving an economic decision by an individual ● Demonstrate responsibility for consequences of economic choices
Three Strategic Thinking	IB 4.2 Apply processes involved in consumer financial planning. ● Identify the difference between needs and wants ● Describe the importance of financial goals ● Create and analyze the budget process ● Examine careers in financial planning
Two Skill/Concept	IB 4.3 Examine available banking services and credit options. ● Describe different types of financial institutions and their services ● Explain various types of consumer credit ● Describe positive and negative consequences of using credit ● Explore careers pertaining to financial services
Two Skill/Concept	IB 4.4 Explain savings and investment options to meet short- and long-term goals. ● Explain the time value of money ● Explain differences between savings and investing ● Identify criteria for choosing savings and investment options ● Examine careers concerning savings and investing



Business Computer Applications

Career Cluster	Business Management and Administration
Course Code	10005
Prerequisite(s)	Recommended – Workplace Technology Skills
Credit	0.5 to 1.0
Program of Study and Sequence	Workplace Technology Skills– Business Computer Applications – Advanced Business Computer Applications or Dual Enrollment
Student Organization	Future Business Leaders of America (FBLA) and DECA
Coordinating Work-Based Learning	Teacher Demonstrations, Collaborative Instruction, Peer Teacher, School and Community Projects, Online Resources/Tutorials
Industry Certifications	Microsoft Office Specialist (MOS)
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Business Marketing & Management Pathway Endorsement; Marketing Cluster Endorsement; Sales, Merchandising & Marketing Research Support Pathway Endorsement; K-12 Classroom Technology; *Business Education; *K-12 Educational Technology
Resources	Certiport.com, Microsoft Office Suite, Google Suite

Course Description

Business Computer Applications focuses on integrating computer technology with decision-making and problem-solving skills. Areas of instruction include advanced applications in e-mail management, file management, word processing, spreadsheets, presentation, and database software that prepare students for industry standard certifications.

Program of Study Application

Business Computer Applications is a Pathway Course in the Business Management and Administration cluster, Administrative Support and Business Information Management Pathways. This course would follow the Foundations of Technology course and lead into the Expert Computer Applications course.

Course Standards

ACA 1: Students will be able to manage an email system using a variety of features.

Webb Level	Sub-indicator
Two Skill/Concept	ACA 1.1 Identify the role an email system plays in an organization and with information security. ● Compare and contrast personal and professional email usage ● Understand company policy and procedure around the use of technology and email systems
Two Skill/Concept	ACA 1.2 Create and manage a contact list. ● Create individual contacts ● Create groups ● Manage contacts within your organizations
Two Skill/Concept	ACA 1.3 Organize and manage folders within the email system. ● Create individual folders ● Organize and manage folders
Two Skill/Concept	ACA 1.4 Manage the calendar function within the email system. ● Schedule meetings with invited participants ● Establish a personal schedule within the calendar function ● Compare and contrast various aspects of calendar invites e.g. accept, decline, propose new time, etc.

ACA 2: Students will be able to implement file management using a variety of methods.

Webb Level	Sub-indicator
Two Skill/Concept	2.1 Compare and contrast options available in file management. ● Identify file saving locations and pros and cons of each ● Demonstrate saving files in cloud systems ● Demonstrate saving files in network systems ● Demonstrate saving files on a hard drive
Two Skill/Concept	2.2 Utilize collaboration in file management. ● Identify shared drives and folders ● Create and utilize shared folders

ACA 3: Students will be able to produce word processing documents using a variety of features.

Webb Level	Sub-indicator
Two Skill/Concept	ACA 3.1 Create and manage documents. ● Create a document ● Navigate through a document ● Format a document ● Customize options and views for documents ● Print and save documents
Two Skill/Concept	ACA 3.2 Format text, paragraphs, and sections. ● Insert text and paragraphs ● Format text and paragraphs ● Order and group text and paragraphs

Two Skill/Concept	ACA 3.3 Create tables and lists. ● Create a table ● Modify a table ● Create and modify a list
Two Skill/Concept	ACA 3.4 Create and manage references. ● Create and manage reference markers ● Create and manage simple references
Two Skill/Concept	ACA 3.5 Insert and format graphic elements. ● Insert graphic elements ● Format graphic elements ● Insert and format SmartArt graphics

ACA 4: Students will be able to produce spreadsheets using a variety of features.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ACA 4.1 Create and manage worksheets and workbooks. ● Create worksheets and workbooks ● Navigate in worksheets and workbooks ● Format worksheets and workbooks ● Customize options and views for worksheets and workbooks ● Configure worksheets and workbooks for distribution
Two Skill/Concept	ACA 4.2 Manage data cells and ranges. ● Insert data in cells and ranges ● Format cells and ranges ● Summarize and organize data
Two Skill/Concept	ACA 4.3 Create tables. ● Create and manage tables ● Manage table styles and options ● Filter and sort a table
Two Skill/Concept	ACA 4.4 Perform operations with formulas and functions. ● Demonstrate use of formulas ● Summarize data by using functions ● Perform conditional operations by using functions ● Format and modify text by using functions
Two Skill/Concept	ACA 4.5 Create charts and objects. ● Create charts ● Format charts ● Insert and format objects

ACA 5: Students will be able to produce professional presentations using a variety of features.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ACA 5.1 Create and manage presentations. ● Create presentations ● Insert and format slides ● Modify slides, handouts, and notes ● Order and group slides

	● Change presentation options and views ● Configure a presentation for print ● Configure and present a slide show ● Merge content from multiple presentations into one final presentation
Two Skill/Concept	ACA 5.2 Insert and format text, shapes and images. ● Insert and format text ● Insert and format shapes and text boxes ● Insert and format images ● Order and group objects
Two Skill/Concept	ACA 5.3 Insert tables, charts, SmartArt and media. ● Insert and format tables ● Insert and format charts ● Insert and format SmartArt graphics ● Insert and manage media ● Embed and link media
Two Skill/Concept	ACA 5.4 Apply transitions and animations. ● Apply slide transitions ● Animate slide content ● Set timing for transitions and animations

ACA 6: Students will be able to produce databases using a variety of features.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ACA 6.1 Create and manage a database. ● Understand the components of a database ● Create and modify databases ● Manage relationships and keys ● Navigate through a database ● Protect and maintain databases ● Print and export data
Two Skill/Concept	ACA 6.2 Build tables. ● Create tables ● Manage tables ● Manage records in tables ● Create and modify fields
Two Skill/Concept	ACA 6.3 Create queries. ● Create calculated fields and grouping within queries
Two Skill/Concept	ACA 6.4 Create forms. ● Create a form ● Configure form controls ● Format a form
Two Skill/Concept	ACA 6.5 Create reports. ● Create a report ● Configure report controls ● Format a report
Two	ACA 6.6 Explore uses for database systems.

Skill/Concept	● Compare and contrast industry specific databases and/or models
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ACA 7: Students will be able to identify a variety of employment opportunities that utilize computer applications.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ACA 7.1 Identify employment opportunities.
Two Skill/Concept	ACA 7.2 Compare and the contrast the value of the industry certifications on employment in related industries.



Advanced Business Computer Applications

Career Cluster	Business Management and Administration
Course Code	10049
Prerequisite(s)	Business Computer Applications
Credit	0.5 to 1.0
Program of Study and Sequence	Workplace Technology - Business Computer Applications – Advanced Business Computer Applications – Dual Enrollment or Capstone Experience
Student Organization	Future Business Leaders of America (FBLA) and DECA
Coordinating Work-Based Learning	Guest speakers, job shadowing
Industry Certifications	Microsoft Office Specialist (MOS) Expert Microsoft Office Specialist Master (optional)
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Business Marketing & Management Pathway Endorsement; Marketing Cluster Endorsement; Sales, Merchandising & Marketing Research Support Pathway Endorsement; K-12 Classroom Technology; *Business Education; *K-12 Educational Technology
Resources	Certiport.com, Microsoft Office Suite, Google Suite

Course Description

Advanced Business Computer Applications focuses on integrating computer technology with decision-making and problem-solving skills. Areas of instruction include expert level applications in word processing and spreadsheet software that prepare students for MOS Expert industry certifications.

Program of Study Application

Advanced Business Computer Applications is a Pathway Course in the Business Management and Administration cluster, Administrative Support pathway. This course would follow the Advanced Computer Applications course and leads to a Capstone Experience.

Course Standards

ECA 1: Students will be able to produce word processing documents implementing expert level features.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ECA 1.1 Manage document options and settings. • Manage documents and templates • Prepare documents for review • Manage document changes
Two Skill/Concept	ECA 1.2 Design advanced documents. • Perform advanced editing and formatting • Create styles
Three Strategic Thinking	ECA 1.3 Create advanced references. • Create and manage indexes • Create and manage references • Manage forms, fields, and mail merge operations
Four Extended Thinking	ECA 1.4 Create custom word elements. • Create and modify building blocks, macros, and controls • Create custom style sets and templates • Prepare a document for internationalization and accessibility

ECA 2: Students will be able to produce spreadsheets implementing expert level features.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ECA 2.1 Manage workbook options and settings. • Manage workbooks • Manage workbook review
Two Skill/Concept	ECA 2.2 Apply custom data formats and layouts. • Apply custom data formats and validation • Apply advanced conditional formatting and filtering • Create and modify custom workbook elements • Prepare a workbook for internationalization
Three Strategic Thinking	ECA 2.3 Create advanced formulas. • Apply functions in formulas • Look up data by using functions • Apply advanced date and time functions • Perform data analysis and data mining • Troubleshoot formulas • Define named ranges and objects
Three Strategic Thinking	ECA 2.4 Create advanced charts and tables. • Create advanced charts • Create and manage PivotTables • Create and manage PivotCharts

ECA 3: Explore relevant factors that impact success and satisfaction in MOS-related careers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ECA 3.1 Compare and contrast characteristics of MOS-related careers. ● Research the geographic demands/limitations for careers of interest ● Identify work schedules, organizational cultures, and workplace environments typical of various careers (e.g., work-from-home, shift work, travel, customer interaction, etc.) ● Investigate opportunities for career advancement
Two Skill/Concept	ECA 3.2 Compare and contrast education/training requirements for employment in MOS-related careers. ● Identify skill requirements and expectations for a license or certification ● Compare and contrast time commitments required for different education/training options (e.g., military, technical college, university, on-the-job-training, apprenticeship, etc.) ● Compare and contrast costs required for different education/training options (e.g., military, technical college, university, on-the-job-training, apprenticeship, etc.) ● Tour local businesses or take a field trip to a technical college or university
Four Extended Thinking	ECA 3.3 Investigate and make connections to relevant MOS-related careers. ● Connect with local businesses ● Connect with post-high school resources ● Identify and grow personal network strengths ● Establish a personal network through LinkedIn or similar professional site



Business Law

Career Cluster	Business Management and Administration
Course Code	12054
Prerequisite(s)	Introduction to Business (Recommended)
Credit	0.5 to 1.0
Program of Study and Sequence	Introduction to Business – Business Law – Pathway or Advanced Cluster Course
Student Organization	Future Business Leaders of America (FBLA), DECA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, and Tours
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; *Business Ed.
Resources	N/A

Course Description

Business Law focuses on an understanding of the judicial system at the local, state, and national levels. Topics include a general understanding of constitutional law, torts, ethics, securities, consumer protection, contract law, rights and responsibilities as citizens, utilization of financial transactions, employment and agency relationships, and regulations governing different types of business organizations.

Program of Study Application

Business Law is a pathway course in the Business Management and Administration cluster in the Human Resources Management, General Management, and Operations Management pathways. This course would follow the Introduction to Business, Accounting I, Personal Finance, and/or Principles of Marketing cluster courses.

Course Standards

BL 1: Students will analyze relationships between business ethics and classifications of business law.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	BL 1.1 Compare and contrast differences between business ethics and business laws and identify consequences of unethical and illegal conduct. ● Identify ethical characteristics ● Compare various ethical theories ● Analyze values in constructing an ethical code and laws
Four Extended Thinking	BL 1.2 Analyze the origin of today's law and functions of local, state and federal court systems. ● Discuss roles of constitutions, common laws, statutory laws, court decisions and state administrative laws ● Determine how courts impact laws and understand the value of setting precedent ● Explain structures and functions of federal, state and local court systems ● Identify the types of cases heard at each level of court system
Three Strategic Thinking	BL 1.3 Distinguish between procedural and substantive laws. ● Describe dispute resolution techniques ● Identify steps in criminal and civil trials and who is involved

BL 2: Students will demonstrate an understanding of characteristics of criminal and tort laws.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	BL 2.1 Differentiate among categories of criminal law, different types of business crimes, and available penalties. ● Examine felonies, misdemeanors and infractions, and categories of criminal law ● Study effects of forgery, fraud, embezzlement and perjury on business organizations ● Determine defenses of criminal acts and describe penalties ● Research computer crimes and the laws regarding them
Three Strategic Thinking	BL 2.2 Differentiate among categories of tort law and describe remedies available. ● Examine negligence, intentional and strict liability, and other types of torts ● Identify and explain elements of negligence torts ● Discuss concepts of the reasonable person test and proximate cause

BL 3: Students will evaluate relationships among contract law, law of sales, and consumer law.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	BL 3.1 Demonstrate an understanding of contractual relationships and identify elements of a valid contract. ● Identify classifications of contracts ● Discuss consideration as it applies to contract law ● Explain ramifications of contracting with a minor ● Describe rules applied to interpretations of contracts

Three Strategic Thinking	BL 3.2 Understand and defend methods by which a contract may be terminated or discharged. • Interpret breach of contract • Choose legal remedies available for resolution of breach of contracts • Interpret fraud, non-disclosure, misrepresentation, mistake, duress and undue influence
Two Skill/Concept	BL 3.3 Compare and contrast law of sales and consumer laws. • Evaluate consumer protection laws • Examine the Uniform Commercial Code and its effects on business transactions • Examine unfair and deceptive practices that are common • Examine various administrative agencies that regulate consumer credit

BL 4: Students will analyze the role and importance of employment law as it relates to the conduct of business organizations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	BL 4.1 Demonstrate an understanding of employer-employee relationships, including independent contractors. • Explain the implications of Objective Justification within the workplace • Explain the doctrine of employment-at-will • Describe wrongful discharge and exceptions to employment-at-will •
Three Strategic Thinking	BL 4.2 Identify employee rights and their implications in workplace settings. • List and explain legislation that regulates employment rights, conditions and worker benefits • Identify employee rights that affect employment interview, testing, laws affecting minors and collective bargaining • Identify an employer's responsibilities to verify employment eligibility

BL 5: Students will utilize career-planning concepts, tools and strategies to explore, obtain and/or develop a career in law.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Reproduction	BL 5.1 Describe the importance of career readiness (soft-skill) practices in careers in law. • Understand the importance of communication (oral, written, non-verbal, and listening), problem solving, teamwork, decision-making, conflict resolution, critical analysis and ethical reasoning.
One Recall and Reproduction	BL 5.2 Describe roles and responsibilities of careers in law. • Explain the role and responsibilities of administrative careers in law • Describe the role and responsibilities of executive/managerial careers in law.



Business Management

Career Cluster	Business Management and Administration
Course Code	12052
Prerequisite(s)	Introduction to Business (Recommended)
Credit	0.5 to 1.0
Program of Study and Sequence	Introduction to Business – Business Management – Pathway or Advanced Cluster Course
Student Organization	Future Business Leaders of America (FBLA), DECA
Coordinating Work-Based Learning	Guest Speakers, Field Trips, and Tours
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; *Business Ed.
Resources	N/A

Course Description

Business Management focuses on the development of the planning, organizing, leading, and controlling functions required within the business environment. This applied knowledge course addresses the management role of utilizing the business's resources of employees, equipment, and capital to achieve an organization's goals.

Program of Study Application

Business Management is a Pathway Course in the Business Management and Administration cluster in the Human Resources Management, General Management, Operations Management, and Business Information Management pathways. This course would follow the Introduction to Business, Accounting I, Personal Finance, and/or Principles of Marketing cluster courses.

Course Standards

MGT 1: Students will define management and its role in effective and efficient performance in business and/or organizations.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MGT 1.1 Explain why management is important in business and/or organizations. ● Define management and the management process such as planning, organizing, leading, controlling ● List what managers do in business ● Utilize career-planning concepts, tools and strategies to explore, obtain and/or develop a career in business management
One Recall	MGT 1.2 Describe characteristics of successful managers. ● Identify personal characteristics of an effective manager ● Explain how managers are effective as on-task, goal oriented, and efficient ● Define ways a manager becomes a leader
Three Strategic Thinking	MGT 1.3 Identify challenges that managers face in business and/or organizations and propose what they can do to overcome these challenges. ● Determine how a code of ethics applies to decisions made by managers, e.g. hiring practices, employee/employer expectations, professional responsibility ● Evaluate ethical considerations involving managers and business relationships

MGT 2: Students will determine how functions of management are implemented and why they are important.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MGT 2.1 Investigate the planning function of management. ● Explain what planning is and why it is important ● Explain the business decision-making process ● Explain the role of operations planning and strategic planning ● Write short- and long-term strategic goals ● Identify planning tools such as budgets, schedules, and policies
Two Skill/Concept	MGT 2.2 Interpret the organizing function of management. ● Identify and provide examples of forms of ownership: sole proprietorship, partnership, corporations, franchises, cooperatives, and S-corporations ● Evaluate the advantages and disadvantages of each form of ownership ● Identify types of organization structure: line, line and staff, matrix, team, committee, and grapevine; centralized vs. decentralized ● Create organization charts
Two Skill/Concept	MGT 2.3 Investigate the directing/leading function of management. ● Identify leaders and effective leadership qualities ● Compare and contrast leadership styles: autocratic, democratic, laissez faire ● Describe techniques managers use to motivate individual employees ● Describe professionalism and why participation in professional associations is important

Two Skill/Concept	MGT 2.4 Summarize the controlling and evaluating functions of management. - Describe the importance of business mission statements, vision statements, goals and objectives - Understand the need to measure performance against established expectations - Determine how to choose standards for internal and external controls
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MGT 3: Students will evaluate the importance of a manager in the successful operation of a business organization.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	MGT 3.1 Analyze human resources and management theories in a business and/or organization. - Describe and analyze management theories - Identify methods used in recruiting, hiring, training, and firing of employees - Identify trends in the modern workplace - Report on compensation and benefits
Four Extended Thinking	MGT 3.2 Propose strategies for bringing together a cohesive workforce. - Compare and contrast communication within organizations and the workforce - Analyze ways to manage conflict and stress in the workplace - Analyze characteristics of an effective team member
Four Extended Thinking	MGT 3.3 Evaluate human relations, self-management, technological, organizational, communication and professional leadership skills in managing a business and/or organization. - Examine the importance of time management tools and skills - Examine the role of technology in the overall management process - Examine the role of communication in the overall management process - Examine the advantages of networking to achieve personal and professional advancement - Examine strategies to develop liaisons with professional organizations such as internships, volunteer work, and membership in organizations

MGT 4: Students will be able to analyze the impacts of international and government regulations on management decisions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MGT 4.1 Investigate the legal environment of managing a business and/or organization - Describe how the workplace has changed as a result of labor legislation - Explain laws pertaining to business practices - Examine the legal aspect of starting a business - Identify and analyze illegal marketing practices
Three Strategic Thinking	MGT 4.2 Investigate the economic and international environment of managing a business and/or organization. - Distinguish economic terms - Compare ways businesses compete domestically and globally

	• Compare forces of supply and demand in the economy • Compare various types of competition
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Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

MS Family & Consumer Science (19000^)
Human Development: Prenatal to Toddlers (19052^)
Human Development: Adolescence to Adulthood (19261^)
Introduction to Education & Training (19151^)

Pathway Courses

<i>Administration & Administrative Support Pathway</i>	<i>Professional Support Services Pathway</i>	<i>Teaching/Training Pathway</i>
SD Educators for Tomorrow (19152^)	SD Educators for Tomorrow (19152^) Human Development: Preschool to School Age (19051^)	SD Educators for Tomorrow (19152^) Human Development: Preschool to School Age (19051^)

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Education & Training Career Cluster.

Academic CTE Courses

Psychology (04254^)
Sociology (04258^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)

Introduction to Education and Training

Career Cluster	Education and Training
Course Code	19151
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Introduction to Education & Training is the recommended prerequisite for pathway courses such as SD Educators for Tomorrow.
Student Organization	FCCLA
Coordinating Work-Based Learning	Tours, Guest Speakers, Job Shadowing, Classroom Observations.
Industry Certifications	National Career Readiness Certificate, Occupational Safety and Health Administration Certification, CPR, and First Aid.
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Education & Training Cluster Endorsement; FACS Endorsement
Resources	

Course Description:

Education is a lifelong process. There is a need for continued learning after the traditional end to formal education. Educators and trainers provide educational opportunities for these life-long learners. *Introduction to Education and Training* is designed to give high school learners an overview of the opportunities, occupations, and skills needed in the education and training career cluster.

Program of Study Application

Introduction to Education and Training is recommended as a prerequisite for the three pathways in Education & Training.

Administration & Administrative Support Pathway

- Occupations whose workers provide direction, leadership, and day-to-day management and support of educational activities in schools, preschools, child care centers, colleges, universities, businesses and industries, correctional institutions, museums, and job training and community service organizations.

Professional Support Services Pathway

- Occupations that assist people involved in education and training systems with personal and family needs, mental health assistance, educational goals, and career decision making.

Teaching/Training Pathway

- Occupations that lead or assist in the delivery of instructional materials or lessons in classrooms, workshops, or via online and distance technology. Includes individual and group instruction of children, adults, and professionals.

Course Standards**Indicator # ED 1 Explore career opportunities in education and training.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ED 1.1 Compare the career potential in Administration and Administrative Support Services, Professional Support Services, and Teaching/Training.	

Indicator # ED 2 Analyze skills of effective educators or trainers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	ED 2.1 Evaluate concepts of effective communication skills needed in an education or training setting.	
Level 2: Skill/Concept	ED 2.2 Apply effective planning and presentation skills in an education or training setting.	
Level 2: Skill/Concept	ED 2.3 Explore management strategies for an effective and efficient learning environment.	

Indicator # ED 3 Investigate influences on education and training.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ED 3.1 Examine the history of education & training.	
Level 3: Strategic Training	ED 3.2 Discuss inequity and diversity in education.	
Level 2:	ED 3.3 Assess the influence of learning styles on education or training.	

Skill/Concept		
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Indicator # ED 4 Analyze professional ethics and legal responsibilities in education and training.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Training	ED 4.1 Explore goals, policies, and procedures to ensure a positive learning environment.	
Level 2: Skill/Concept	ED 4.2 Interpret emergency and safety procedures in an education or training settings.	
Level 2: Skill/Concept	ED 4.3 Gather and examine professional ethics as they relate to education and training.	
Level 3: Strategic Thinking	ED 4.4 Assess appropriate confidentiality regarding educational and occupational information.	

Human Development: Adolescence to Adulthood

Career Cluster	Education and Training
Course Code	19261
Prerequisite(s)	Human Development: Adolescence to Adulthood is a recommended prerequisite for pathway courses such as Teaching and Training as a Profession.
Credit	.5
Program of Study and Sequence	Human Development: Adolescence to Adulthood is a recommended prerequisite for pathway courses such as Teaching and Training as a Profession.
Student Organization	FCCLA
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Volunteer.
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Education & Training Cluster Endorsement; Human Services Cluster Endorsement; FACS Endorsement
Resources	

Course Description:

Each person passes through various life stages. These stages are infancy, childhood, adolescence, young adulthood, middle life and later life. Understanding human development helps students prepare for the roles of adulthood. *Human Development: Adolescence through Adulthood* is a course that is designed to enable students to gain knowledge necessary to understand the developmental stages from adolescence through late adulthood. The course will examine the developmental tasks, traits and problems of each of these stages.

Program of Study Application

This is one of three Human Development courses in the suggested sequence of Education and Training career cluster. It is recommended that it be preceded by Foundational CTE Courses and Introduction to Education and Training. The course is followed by Teaching and Training as a Profession and Capstone Experience.

Course Standards

Indicator # HDAA 1 Analyze principles of human growth and development from adolescence through adulthood.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	HDAA 1.1 Compare human development theories related to adolescence and adulthood.	
Three Strategic Thinking	HDAA 1.2 Assess interrelationships among physical, emotional, social, and intellectual aspects of human growth and development.	

Indicator # HDAA 2 Analyze influences on human growth and development.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	HDAA 2.1 Investigate the effect of heredity and environment on human development.	
Two Skill/Concept	HDAA 2.2 Identify the effects of gender and culture on human development.	
Four Extended Thinking	HDAA 2.3 Connect the effects technology has on human growth and development.	
Three Strategic Thinking	HDAA 2.4 Investigate support systems for adolescence through later life and the issues they address. (eg. abuse, homelessness, food insecurity, financial assistance, elder care, memory care)	

Indicator # HDAA 3 Indicator HDAA 3 Analyze the processes of aging and death.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	HDAA 3.1 Analyze social practices and coping methods related to aging and death.	
Three Strategic Thinking	HDAA 3.2 Demonstrate understanding of legal and ethical factors related to aging and death.	

Indicator # HDAA 4 Investigate career paths for working with adolescents through the aging population.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill Concept	HDAA 4.1 Summarize knowledge and skills for a career working with adolescents through the aging population.	

Human Development: Prenatal to Toddlers

Career Cluster	Education and Training
Course Code	19052
Prerequisite(s)	Introduction to Education and Training
Credit	.5
Program of Study and Sequence	Human Development: Prenatal to Toddlers is a recommended prerequisite for pathway courses such as Teaching and Training as a Profession.
Student Organization	FCCLA
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Volunteer.
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Education & Training Cluster Endorsement; Human Services Cluster Endorsement; FACS Endorsement
Resources	

Course Description:

Understanding patterns, sequences, and stages of development is vital for guiding infants and toddlers to make informed decisions. Due to an increasing number of working parents and a need for highly qualified educators, trained personnel in the childcare field are in demand. Human development knowledge is essential for individuals seeking a career in education, health, medical and human service professions, and many other careers involving working with infants and toddlers.

Program of Study Application

This is one of three Human Development courses in the suggested sequence of Education and Training career cluster. It is recommended that it be preceded by Foundational CTE Courses and Introduction to Education and Training. The course is followed by Teaching and Training as a Profession and Capstone Experience.

Course Standards**Indicator # HDPT 1 Analyze principles of human development.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	HDPT 1.1 Investigate human development theories to predict infant and toddler behavior.	
Level 4: Extended Thinking	HDPT 1.2 Analyze socio-cultural, hereditary, and environmental factors that influence infant and toddler development.	
Level 4: Extended Thinking	HDPT: 1.3 Analyze family systems	
Level 3: Strategic Thinking	HDPT 1.4 Investigate support systems for pre-pregnancy care, prenatal care, infants, and toddlers and the issues they address. (e.g. abuse, homelessness, food insecurity, financial assistance, fertility, genetic testing, adoption)	

Indicator # HDPT 2 Analyze development from conception through birth.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	HDPT 2.1 Critique healthy prenatal development and child birth. <i>Examples:</i> - Classify prenatal habits that are healthy for the baby, mother, and father. - Develop a logical argument for birth plan options.	

Indicator # HDPT 3 Analyze development of infants.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
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Level 4: Extended Thinking	HDPT 3.1 Analyze the physical, emotional, social, and intellectual development of infants.	
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Indicator # HDPT 4 Analyze development of toddlers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	HDPT 4.1 Analyze the physical, emotional, social, and intellectual development of toddlers.	

Indicator # HDPT 5 Investigate career paths for working with prenatal care to toddlers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	HDPT 5.1 Summarize knowledge and skills for a career working with prenatal care to toddlers.	

Human Development: Preschool to School Age

Career Cluster	Education and Training
Course Code	19051
Prerequisite(s)	Recommended Human Development: Prenatal to Toddlers
Credit	.5
Program of Study and Sequence	Human Development: Preschool to School Age is a recommended prerequisite for pathway courses such as Teaching and Training as a Profession.
Student Organization	FCCLA
Coordinating Work-Based Learning	CPR, First Aid, Red Cross Babysitting, 4-H “I Have What it Takes to Be Your Babysitter”.
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Education & Training Cluster Endorsement; Human Services Cluster Endorsement; FACS Endorsement
Resources	

Course Description:

This course is designed to be project-based in nature. The following topics will be discussed: preschool and school-age theories in practice; growth and development; regulations and opportunities in the child care industry; special topics related to children such as childhood diseases, special needs, and child abuse/neglect; and first aid/emergency training. Students will have the opportunity to work with children in a preschool setting. An experiential learning activity will also be part of the class. This class is designed for students who enjoy working with children.

Program of Study Application

This is one of three Human Development courses in the suggested sequence of Education and Training career cluster. It is recommended that it be preceded by Foundational CTE Courses and Introduction to Education and Training. The course is followed by Teaching and Training as a Profession and Capstone Experience.

Course Standards

Indicator # HDPS 1 Analyze principles of growth and development of preschool through school-aged children.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Four	HDPS 1.1 Apply concepts from human development theories to the preschool through school-aged children.	
Four	HDPS 1.2 Analyze physical, social, emotional, cognitive development of preschool children.	

Indicator # HDPS 2 Analyze conditions that influence growth and development.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three	HDPS 2.1 Examine the effects of culture, environment, and inherited influences on growth and human development.	
Four	HDPS 2.2 Analyze the effects of life events.	
Four	HDPS 2.3 Analyze geographic, legislative, and global influences on growth and development.	

Indicator # HDPS 3 Analyze strategies that promote growth and development of preschool through school-aged children.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Four	HDPS 3.1 Create and maintain a safe and healthy learning environment for preschool through school-aged children.	

Four	HDPS 3.2 Design strategies that promote physical, social, emotional and cognitive development.	
Four	HDPS 3.3 Investigate support systems for caregivers, teachers, and children and the issues they address. (e.g. abuse, homelessness, food insecurity, financial assistance, special needs)	

Indicator # HDPS 4 Investigate career paths for working with preschool and school-aged children.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two	HDPS 4.2 Summarize knowledge and skills for a career working with children.	

SD Educators for Tomorrow

Career Cluster	Education and Training
Course Code	19152
Prerequisite(s)	Recommended at least one Human Development course and Introduction to Education and Training.
Credit	.5
Program of Study and Sequence	Administration & Administrative Support Pathway, Professional Support Services Pathway, Teaching/Training Pathway.
Student Organization	FCCLA
Coordinating Work-Based Learning	Field experience highly recommended.
Industry Certifications	No
Dual Credit or Dual Enrollment	No
Teacher Certification	Education & Training Cluster Endorsement; Human Services Cluster Endorsement; Early Childhood Development Pathway Endorsement; FACS Endorsement
Resources	Community

Course Description:

Across the nation, particularly in South Dakota, schools, businesses and industries are facing a teacher or trainer shortage. The course SD Educators for Tomorrow is intended to give knowledge, skills, and experiences to high school students who are considering a profession in education (early childhood, elementary, or middle/high school) or training (business or industry).

Program of Study Application

SD Educators for Tomorrow is a pathway course in the Education and Training career cluster. It is to be preceded by foundational courses, middle school foundation courses and cluster courses, and followed by a capstone experience.

Course Standards

Indicator # SDE 1 Evaluate personal and professional attributes essential to becoming an effective teacher or trainer.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	SDE 1.1 Assess personal attributes as they relate to teaching and training.	
Level 3: Strategic Thinking	SDE 1.2 Assess the qualities of professional and ethical behavior for teachers and trainers.	
Level 2: Skill/Concept	SDE 1.3 Explore the professional development and community service of educators and trainers.	

Notes:**Indicator # SDE 2 Analyze knowledge required for careers in education/training.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	SDE 2.1 Analyze theories of development and learning to guide instruction or training.	
Level 4: Extended Thinking	SDE 2.2 Analyze relationships within families and communities that impact teaching and training.	
Level 2: Skill/Concept	SDE 2. 3 Create a positive learning environment.	

Indicator SDE 3: Explore the importance of learners needs and standards to the planning process.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	SDE 3.1 Analyze needs of learners or organizations.	
Level 3:	SDE 3.2 Research standards or business policies that guide an	

Strategic Thinking	education or training plan.	
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Indicator SDE 4: Demonstrate integration of curriculum and instruction to meet developmental needs of individuals.

Level 3: Strategic Thinking	SDE 4.1 Investigate a variety of curriculum and instructional models/strategies.	
Level 3: Strategic Thinking	SDE 4.2 Assess group processes and skills for working collaboratively in education and training.	
Level 4: Extended Thinking	SDE 4.3 Plan and evaluate the components of a lesson/training plan.	
Level 3: Strategic Thinking	SDE 4.4 Assess learning of audience for a standard or performance.	

Middle School

Family and Consumer Sciences

Career Cluster	Education and Training; Human Services; Arts & A/V; Hospitality and Tourism
Course Code	19000
Prerequisite(s)	None
Credit	Part of middle school curriculum; credit will vary according to school
Program of Study and Sequence	This course is a foundational course, and part of the four content areas in Middle School Family and Consumer Sciences with standards for human development, relationships, career exploration and nutrition and wellness.
Student Organization	FCCLA
Coordinating Work-Based Learning	Work-based experience through volunteer opportunities
Industry Certifications	None
Dual Credit or Dual Enrollment	None
Teacher Certification	Education & Training Cluster Endorsement; Human Services Cluster Endorsement; Hospitality & Tourism Cluster Endorsement; FACS Endorsement
Resources	

Course Description:

Middle school students are exploring many areas of life. A career decision is an important part of each student's life. Career decisions require careful planning and understanding. An awareness of the career clusters and pathways, particularly those related to Family and Consumer Sciences, is the beginning of a career destination. Transferable skills, basic knowledge and understanding of each career cluster within Family and Consumer Sciences are vital for student success.

Program of Study Application

This is a foundational course. The course can be tailored to meet the needs of individual schools by giving them the option of choosing appropriate standards from seven content areas: Career Exploration, Nutrition, Healthy Relationships, Human Development, Textiles, Interior Design, Hospitality and Tourism

Course Standards

Topic: Career Exploration		
Indicator MSFCS- CE 1 Analyze information about career opportunities to make informed career decisions		
		Integrated Content
Level 4: Extended Thinking	CE 1.1 Investigate the knowledge and skills associated within the sixteen career clusters.	
Level 3: Strategic Thinking	CE 1.2 Evaluate potential careers in the Education and Training, Arts, A/V Technology and Communications, Human Services and Hospitality and Tourism career clusters	
Level 3: Strategic Thinking	CE 1.3 Assess social, economic and technology influences on career choices.	

Indicator MSFCS- CE 2 Evaluate employability and soft skills in school, community and workplace settings.		
		Integrated Content
Level 3: Strategic Thinking	CE 2.1 Investigate employability and soft skills in school, community and workplace settings.	
Level 2: Skill/Concept	CE 2.2 Use service learning or volunteerism to develop employability and soft skills.	
Level 4: Extended Thinking	CE 2.3 Develop leadership and teamwork skills.	

Indicator MSFCS -CE 3 Create a personal learning plan that incorporate a career path.		Integrated Content
Level 4: Extended Thinking	CE 3.1 Analyze career assessment results to explore career cluster options.	
Level 4: Extended Thinking	CE 3.2 Develop a personal learning plan needed to achieve individual and career goals.	

<u>Topic: Nutrition</u>		
Indicator MSFCS-NW 1 Investigate careers in the nutrition and wellness industry.		Integrated Content
Level 2: Skill/Concept	NW 1.1 Explore knowledge and skills needed for careers in nutrition and wellness related occupations.	

Indicator MSFCS- NW 2 Explain the components of individual and family wellness.		Integrated Content
Level 2: Skill/Concept	NW 2.1 Describe how food choice decisions affect personal and family wellness.	
Level 2: Skill/Concept	NW 2.2 Investigate the relationships between physical activity and healthy lifestyles.	
Level 1: Recall	NW 2.3 Identify the six main nutrients and their relationship to a healthy lifestyle.	
Level 2: Skill/Concept	NW 2.4 Describe factors contributing to nutrition-related diseases and disorders.	

Indicator MSFCS - NW 3 Apply food safety and sanitation practices.		Integrated Content
Level 3: Strategic Thinking	NW 3.1 Explain common practices that promote safe and sanitary food conditions.	

<u>Topic: Human Development</u>		
Indicator MSFCS-HD 1 Investigate careers in the Education and Training and Human Services clusters.		Integrated Content
Level 2: Skill/Concept	HD 1.1 Explore knowledge and skills needed for careers in Education and Training and Human Services clusters.	

Indicator MSFCS - HD 2 Analyze human growth and development.		Integrated Content
Level 2: Skill/Concept	HD 2.1 Investigate the stages of human development, birth through adulthood.	
Level 3: Strategic Thinking	HD 2.2 Analyze how the family contributes to healthy human development.	
Level 2: Skill/Concept	HD 2.3 Analyze the impact of social issues and technology on human development.	

Indicator MSFCS- HD 3 Analyze practices that promote growth and development.		Integrated Content
Level 1: Recall	HD 3.1 Summarize the areas of human development.	
Level 4: Extended Thinking	HD 3.2 Evaluate developmentally appropriate learning activities for all ages.	
Level 3: Strategic Thinking	HD 3.3 Demonstrate understanding of practices that promote the health and safety of all ages.	
Level 2: Skill/Concept	HD 3.4 Understand the roles and responsibilities of a caregiver.	

<u>Topic: Healthy Relationships</u>		
Indicator MSFCS -R 1 Investigate careers in Human Services and Education and Training		
		Integrated Content
Level 2: Skill/Concept	R 1.1 Explore knowledge and skills needed for careers in Human Services and Education and Training clusters.	

Indicator MSFCS- R 2 Analyze how personal growth influences relationships.		
		Integrated Content
Level 2: Skill/Concept	R 2.1 Explain how personal needs, wants and values affect relationships.	
Level 1: Recall	R 2.2 Summarize the effects of self-esteem, mental health, and self-image within relationships.	

		Indicator MSFCS- R 3 Analyze skills needed to build and maintain positive relationships.	
			Integrated Content
Level 2: Skill/Concept	R 3.1 Explain the role of positive communication skills in relationships.		
Level 3: Strategic Thinking	R 3.2 Analyze how personal standards, ethics, and values guide behaviors in relationships.		
Level 4: Extended Thinking	R 3.3 Apply problem-solving strategies and decision making to relationship issues.		
Level 2: Skill/Concept	R.3.4 Understand strategies to resolve conflicts in relationships.		

<u>Topic: Textiles</u>		
Indicator MSFCS -T 1 Explore career opportunities in textiles and clothing industry.		
		Integrated Content

Level 2: Skill/Concept	T 1.1 Explore knowledge and skills needed for careers in the textile and clothing industry.	
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Indicator MSFCS- T 2 Demonstrate skills used in textile production.		Integrated Content
Level 1: Recall	T 2.1 Recognize textile production terminology.	
Level 2: Skill/Concept	T 2.2 Interpret technical instructions.	
Level 2: Skill/Concept	T 2.3 Demonstrate textile production skills.	

<u>Topic: Interior Design</u>		
Indicator MSFCS-ID 1 Explore career opportunities in interior design.		Integrated Content
Level 2: Skill/Concept	ID 1.1 Explore knowledge and skills needed for careers in interior design.	

Indicator MSFCS- ID 2 Demonstrate skills used in interior design.		Integrated Content
Level 2: Skill/Concept	ID 2.1 Describe the elements and principles of design used in an interior space.	
Level 2: Skill/Concept	ID 2.2 Use space planning guidelines.	

<u>Topic: Hospitality and Tourism</u>		
Indicator MSFCS- HT 1 Explore career opportunities in the hospitality and tourism industry.		Integrated Content
Level 2: Skill/Concept	HT 1.1 Explore knowledge and skills needed for careers in the hospitality and tourism industry.	

Indicator MSFCS -HT 2 Demonstrate skills, customer service and safety precautions needed in hospitality and tourism.		Integrated Content
Level 2: Skill/Concept	HT 2.1 Recognize customer service in the hospitality and tourism industry.	
Level 2: Skill/Concept	HT 2.2 Identity safety precautions in the hospitality and tourism industry.	



Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

Introduction to Business (12051^)
Entrepreneurial Skills (12061^)
Personal Finance (19262^)
Business Law (12054^)
Business Economics (12105)
Introduction to Financial Industries (12101)

Pathway Courses

Accounting Pathway	Banking Services Pathway	Business Finance Pathway	Insurance Pathway	Securities & Investments Pathway
Accounting I (12104^) Accounting II (12108) Advanced Accounting (12109^)	Principles of Banking (12102) Accounting I (12104^) International Business & Marketing (12056^) Principles of Selling (12202) Investment Planning (12107) Principles of Insurance (12106)	Accounting I (12104^) Investment Planning (12107) Principles of Insurance (12106) International Business & Marketing (12056^)	Principles of Insurance (12106) Principles of Selling (12202)	Principles of Banking (12102) Accounting I (12104^) International Business & Marketing (12056^) Principles of Selling (12202) Principles of Insurance (12106) Investment Planning (12107) Accounting II (12108) Advanced Accounting (12109^)

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Finance Career Cluster.

Academic CTE Courses

Algebra I (02052^)
Psychology (04254^)
Sociology (04258^)
Economics (04201^)
US Government (04151^)
Probability & Statistics (02201)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdv.s.k12.sd.us/>)



Introduction to Financial Industries

Career Cluster	Finance
Course Code	12101
Prerequisite(s)	None
Credit	0.5
Program of Study and Sequence	Foundation Courses -- Introduction to Financial Industries – Accounting I or Principles of Banking or Principles of Insurance or Investment Planning – Advanced Cluster Courses – Capstone Experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; Business Education
Resources	

Course Description

This course focuses on the banking and financial industries including an understanding of economics as the underlying basis of the transfer and growth of money in our system. Students will gain knowledge of the securities, banking, and insurance industries with information that will not only help them to be a better consumer but also help them to make decisions about careers in the various fields of finance. The course provides information on financial planning and counseling and how it relates to financial services.

Program of Study Application

Introduction to financial industries is a cluster course within the finance cluster. Introduction to financial industries would be preceded by a foundation course and would prepare a student to enter any of the pathways within the finance cluster.

Course Standards

IFS 1: Explain how economics relates to the banking and financial industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IFS 1.1 Describe the role of the Federal Reserve and how interest rates affect the economy.
Two Skill/Concept	IFS 1.2 Explain inflation, deflation, recession, depression and their impact on the banking and financial industries.

IFS 2: Analyze investment opportunities as they relate to the financial industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IFS 2.1 Explain the structure of the securities market.
Three Strategic Thinking	IFS 2.2 Differentiate mutual funds, corporate, and government bonds as they relate to investing.

IFS 3: Examine the various types of insurance handled in the financial industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IFS 3.1 Discuss property and casualty insurance.
Two Skill/Concept	IFS 3.2 Compare types of life insurance policies.

IFS 4: Examine financial planning and counseling and how it relates to financial Industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IFS 4.1 Identify successful strategies to help individuals/families achieve financial goals.
One Recall	IFS 4.2 Discuss the importance of confidentiality when working one-on-one with individuals/families as they work through their financial challenges.
One Recall	IFS 4.3 Explain the importance of avoiding consumer fraudulent activities and the importance of consumer ethics.

IFS 5: Explain industry, consumer and career practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IFS 5.1 Identify the difference between banks and credit unions.
Two Skill/Concept	IFS 5.2 Describe the loan process. Describe the consequences of extending the loan life to achieve lower monthly payments.
Two Skill/Concept	IFS 5.3 Explore career-ready practices.



Accounting I

Career Cluster	Finance
Course Code	12104
Prerequisite(s)	None
Credit	.5 or 1.0 credit
Program of Study and Sequence	Cluster courses – Accounting I – Accounting II or Advanced Accounting – Advanced pathway courses – Capstone experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Accounting Pathway Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

Accounting is the language of business and an integral aspect of all business activities. Accounting I introduces concepts and principles based on a double entry system of maintaining financial records for a sole proprietorship, partnership, and corporation. It includes analyzing business transactions, journalizing, posting, and preparing worksheets and financial statements. Technology and Computerized accounting may be incorporated where resources are available.

Program of Study Application

Accounting I is the first course in the Accounting pathway in the Finance cluster. This course is a prerequisite for the remaining pathway courses of Accounting II and Advanced Accounting.

Course Standards

A 1: Examine the role of accounting in business..

<i>Webb Level</i>	
Two Recall	A 1.1 Identify career opportunities in the accounting profession.
Three Strategic Thinking	A 1.2 Compare and contrast various types of business ownership and accounting principles that apply.
Two Skill/Concept	A 1.3 Comprehend proper cash management techniques and prepare necessary documents and transactions.

A 2: Demonstrate the basic principles and procedures of the accounting cycle.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	A 2.1 Examine, analyze, and categorize financial transactions.
Three Strategic Thinking	A 2.2 Assess the accounting equation as a guide to journalize transactions.
Three Strategic Thinking	A 2.3 Post information from journals into general and subsidiary ledgers.
Four Extended Thinking	A 2.4 Analyze and complete payroll using appropriate accounting practices.

A 3: Create and interpret financial statements.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	A 3.1 Complete and analyze an accounting worksheet.
Three Strategic Thinking	A 3.2 Prepare and interpret formal end-of-fiscal period financial statements.



Accounting II

Career Cluster	Finance
Course Code	12108
Prerequisite(s)	Accounting I
Credit	.5 or 1.0 credit
Program of Study and Sequence	Cluster courses – Accounting I – Accounting II and/or Advanced Accounting – Advanced pathway courses – Capstone experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), Quickbooks
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Accounting Pathway Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

Students in Accounting II will develop advanced skills that build upon those acquired in Accounting I. Additional accounting skills such as departmentalized accounting, reconciling uncollectible accounts, calculating depreciation on assets, interpreting financial information, and calculating notes and interest will be developed. Computerized accounting may be incorporated where resources are available.

Program of Study Application

Accounting II is a continuing course in the Accounting Pathway of the Finance cluster. Accounting I must be completed as a prerequisite and Advanced Accounting may be taken to complete the Accounting Pathway. Followed by a Capstone Experience.

Course Standards

All 1: Demonstrate advanced principles and procedures of the accounting cycle.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	All 1.1 Analyze and prepare financial transactions for a departmentalized accounting system.
Three Strategic Thinking	All 1.2 Apply accounting control system procedures to maintain accurate records.

All 2: Demonstrate advanced accounting procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	All 2.1 Demonstrate the ability to handle uncollectible accounts/bad debts.
Two Skill/Concept	All 2.2 Examine and apply the principles for plant assets and depreciation of assets.
Three Strategic Thinking	All 2.3 Analyze the principles for notes payable and notes receivable.
Three Strategic Thinking	All 2.4 Analyze the principles for accruals.

All 3: Perform accounting functions specific to corporations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	All 3.1 Analyze the factors that affect acquiring additional capital, issuing stock, and calculating and paying dividends.
Four Extended Thinking	All 3.2 Analyze and interpret financial statements for corporations.



Advanced Accounting

Career Cluster	Finance
Course Code	12109
Prerequisite(s)	Accounting I and Accounting II
Credit	.5 or 1.0 credit
Program of Study and Sequence	Cluster courses – Accounting I – Accounting II and/or Advanced Accounting – Capstone Experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Internship
Industry Certifications	National Career Readiness Certificate (NCRC), Quickbooks
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Accounting Pathway Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

Advanced accounting will develop knowledge and skills for cost accounting practices for merchandising and manufacturing businesses. Students will be exposed to specialized managerial accounting functions pertaining to corporations and not-for-profit organizations.

Program of Study Application

Advanced accounting is a continuing pathway course of the accounting pathway of the finance cluster. Accounting II must be completed as a prerequisite and a capstone experience is encouraged.

Course Standards

AA 1: Utilize cost accounting methods to track, record, and analyze business costs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AA 1.1 Explain and demonstrate appropriate cost accounting practices for a departmentalized merchandising business.
Two Skill/Concept	AA 1.2 Explain and demonstrate appropriate cost accounting practices for a manufacturing business.

AA 2: Assess and interpret the financial conditions of corporations to make informed business decisions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	AA 2.1 Evaluate and assess budget reports to make business decisions.
Two Skill/Concept	AA 2.2 Demonstrate specialized accounting procedures to track cash flows.

AA 3: Demonstrate budgeting, accounting and financial reporting for not-for-profit organizations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AA 3.1 Perform special accounting functions pertaining to budgeting for not-for-profit organizations.
Three Strategic Thinking	AA 3.2 Prepare financial statements for not-for-profit organizations.



Investment Planning

Career Cluster	Finance
Course Code	12107
Prerequisite(s)	None
Credit	0.5
Program of Study and Sequence	Cluster Courses – Introduction to Financial Industries – Investment Planning – Principles of Insurance – Advanced Pathway Courses – Capstone Experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

This course defines and analyzes the investment goals of a client, investment tools used, and investment recommendations prescribed to develop a client investment portfolio. Students will gain an understanding of the concepts of investment regulation, client assessment, investment theory, financial markets, strategies, and modern portfolio theory.

Program of Study Application

Investment planning is a second pathway course in the finance cluster, financial services and planning pathway. The course would be preceded by introduction to financial industries or principles of banking. Completion of investment planning would prepare a student to participate in an advanced cluster course or capstone experience.

Course Standards

INV 1: Describe laws and regulations to manage transactions in the securities and investments industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	INV 1.1 Explain regulations and ethical practices of the securities and investments industry.
One Recall	INV 1.2 Describe fundamental concepts of real estate law.
One Recall	INV 1.3 Explain the nature and scope of real estate titling.

INV 2: Identify the financial tools used in the securities and investments industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	INV 2.1 Explain securities and investments products and their benefits.
One Recall	INV 2.2 Describe investment analysis and selection processes.
Four Extended Thinking	INV 2.3 Select investments for clients.
Two Skill/Concept	INV 2.4 Evaluate an asset appraisal to determine their value.

INV 3: Plan, monitor and manage day-to-day securities and investments operations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	INV 3.1 Implement securities and investments operations activities.

INV 4: Explore careers in the securities and investments industry

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	INV 4.1 Identify careers in securities, investments, and real estate.
One Recall	INV 4.2 Understand the role of securities and investments licensing and certification programs.

INV 5: Investigate strategies to Educate and attract potential customers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	INV 5.1 Prospecting customers to grow a customer base.



Personal Finance

Career Cluster	Finance
Course Code	19262
Prerequisite(s)	None
Credit	0.5
Program of Study and Sequence	Foundation course-personal finance-pathway
Student Organization	DECA, FBLA, FCCLA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; Marketing Cluster Endorsement; FACS Endorsement; 7-12 Mathematics Education; 7-12 Social Science Education-Economics; *Business Education
Resources	http://practicalmoneyskills.com/foreducators/lesson_plans/ngpf.org takechargetoday.arizona.edu finance.yahoo.com msnmoney.com morningbrew.com

Course Description

This course will provide a foundational understanding for making informed personal financial decisions leading to financial independence.

Program of Study Application

This is a cluster course in the finance career cluster. It is recommended to take a foundation course before taking the personal finance course.

Course Standards

PF 1: Analyze elements that affect personal income.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PF 1.1 Explain controllable factors involved in personal finance.
Two Skill/Concept	PF 1.2 Analyze factors that affect take home pay.

PF 2: Implement processes involved in managing personal finances.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	PF 2.1 Execute a rational decision-making process considering alternatives and consequences.
Two Skill/Concept	PF 2.2 Differentiate among various money management tools.
Three Strategic Thinking	PF 2.3 Generate a system to organize finances and maintain records.

PF 3: Use an informed decision-making process to manage credit and debt.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PF 3.1 Differentiate the sources, costs and benefits of using consumer credit.
Two Skill/Concept	PF 3.2 Explain the positive and negative consequences of using credit.

PF 4: Evaluate savings and investment options to meet short- and long-term goals.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PF 4.1 Explain how saving contributes to financial security.
Two Skill/Concept	PF 4.2 Explain how investing builds wealth and helps meet financial goals.

PF 5: Use appropriate and cost-effective risk management strategies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	PF 5.1 Evaluate how risk management protects against financial loss.
Three Strategic Thinking	PF 5.2 Determine how consumer protection laws protect consumers.



Principles of Banking

Career Cluster	Finance
Course Code	12102
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Cluster Courses -- Personal Finance – Principles of Banking – Principles of Selling and Advertising – Advanced Pathway Courses -- Capstone Experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Finance Cluster Endorsement; Marketing Cluster Endorsement; Accounting Pathway Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities, & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

This course explores the fundamental principles and practices of banking and credit in the United States giving an overview of the concepts of banking services including the following: money and banking, customer service, lending fundamentals, banking regulations for handling financial transactions, and basic compliance regulations.

Program of Study Application

Principles of banking is the first course in the finance cluster, banking pathway. This course is a prerequisite for the remaining pathway courses in the banking services and securities & investments pathways.

Course Standards

BNKS 1: Describe laws and regulations to manage business operations and transactions in the banking industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	BNKS 1.1 Understand a compliance program and how it protects the company's well-being.
One Recall	BNKS 1.2 Describe regulations and ethical practices governing banking services.

BNKS 2: Understand how to create and maintain positive, ongoing relationships with banking customers.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	BNKS 2.1 Understand how to develop positive relationships with customers to enhance company image.
Three Strategic Thinking	BNKS 2.2 Manage a profitable investment portfolio to build customer relationships.

BNKS 3: Manage the use of financial resources to enhance banking performance.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	BNKS 3.1. Describe the manner in which banks generate profit.
Four Extended Thinking	BNK 3.2. Utilize financial formulas commonly used in banking to determine the growth and stability of banking services.

BNKS 4: Understand banking technology.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	BNKS 4.1. Utilize banking technology to increase workplace efficiency and effectiveness.
One Recall	BNKS 4.2 Understand how consumer banking products and processes are evolving through the use of technology.

BNKS 5: Plan, monitor and manage the day-to-day activities within a banking organization to ensure secure operations.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	BNKS 5.1. Describe how bank security programs minimize chance for loss.
Two Skill/Concept	BNKS 5.2 Demonstrate the proper procedures for cash transactions.
Two Skill/Concept	BNKS 5.3. Describe the loan application process to determine creditworthiness of customers.
Two Skill/Concept	BNKS 5.4. Discuss real estate lending and servicing.
One Recall	BNKS 5.5. Discuss problem loan management.

BNKS 6: Determine client needs and wants.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	BNKS 6.1 Describe sales techniques to acquire new business.
Three Strategic Thinking	BNKS 6.2 Demonstrate sales techniques to acquire new business.

BNKS 7: Utilize career-planning concepts, tools and strategies to explore, obtain and/or develop a career in banking services.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	BNKS 7.1. Describe the importance of ethical practices in the banking industry.
One Recall	BNKS 7.2. Identify the nature and scope of types of banking institutions.
One Recall	BNKS 7.3. Acquire knowledge of banking processes and services.
Two Skill/Concept	BNKS 7.4. Explore the career pathways that exist within the banking industry.



Principles of Insurance

Career Cluster	Finance
Course Code	12106
Prerequisite(s)	None
Credit	0.5
Program of Study and Sequence	Cluster Courses – Introduction to Financial Industries – Principles of Insurance or Investment Planning – Advanced Cluster Courses – Capstone Experience
Student Organization	FBLA, DECA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education
Resources	

Course Description

Principles of Insurance focuses on learning about the various types of insurance. The course will explore the opportunities of careers in insurance. Students will gain an understanding of risk management and the benefits of insurance.

Program of Study Application

Principles of Insurance is a second pathway course in the finance cluster, financial services and planning pathway. The course would be preceded by introduction to financial industries or principles of banking. Completion of principles of insurance would prepare a student to participate in an advanced cluster course or capstone experience.

Course Standards

RMI 1: Utilize career-planning concepts, tools and strategies to explore, obtain and/or develop a career in insurance.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	RMI 1.1. Describe essential knowledge and skills needed to be employed in the insurance industry.
One Recall	RMI 1.2. Explore roles and responsibilities associated with careers in the insurance industry.
One Recall	RMI 1.3. Describe insurance licensing and certification programs.

RMI 2: Acquire product knowledge to communicate product benefits and to ensure appropriateness of product for the customer.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	RMI.2.1 Discuss the components of automobile insurance coverage.
One Recall	RMI.2.2 Discuss the components of health insurance coverage.
One Recall	RMI.2.3 Discuss the components of life insurance coverage.
One Recall	RMI.2.4 Discuss the components of homeowner's and renter's insurance.

RMI 3: Determine client needs and wants to guide purchase decisions and enhance future insurance business opportunities.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	RMI 3.1. Construct an insurance plan based on the consumer's insurance needs.
Three Strategic Thinking	RMI.3.2 Evaluate existing client insurance and risk management needs.

RMI 4: Describe laws and regulations to manage transactions in the insurance industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	RMI 4.1. Define regulations that ensure compliance and demonstrate adherence to insurance industry regulations.
One Recall	RMI 4.2. Explain legal concepts and ethics pertinent to the insurance industry.

RMI 5: Evaluate underwriting techniques and strategies to determine the risk posed by potential insurance clients.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	RMI 5.1. Analyze the risk posed by potential clients in order to make insurance approval/denial decisions.

Foundational CTE Courses

Career Exploration (22151) Employability (22152) Entrepreneurship (12053) Foundations of Technology (10004) Leadership & Service (22101)

Cluster Course

Principles of Public Management & Administration (15201)

Pathway Courses

**Examples of CTE Courses In Other Clusters That Support
Government and Public Administration Careers**

National Security Pathway

***these courses only count for concentrator status within their original cluster**

JROTC I
(Army 09051) (Naval 09101) (Air Force 09151) (Marine 09201)

JROTC II
(Army 09052) (Naval 09102) (Air Force 09152) (Marine 09202)

JROTC III
(Army 09053) (Naval 09103) (Air Force 09153) (Marine 09203)

JROTC IV
(Army 09054) (Naval 09104) (Air Force 09154) (Marine 09204)

Intro to Arts, A/V, Technology & Communication (11001)

Business Law (12054)

Cybersecurity (10108)

Intro to Information Technology (10003)

Construction Trades I (17002)

Intro to Drafting & Design (21102)

PLTW Civil Engineering (21021)

Accounting I (12104)

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Government & Public Administration Career Cluster.

Academic CTE Courses

Algebra I (02052^), Geometry (02072^), Probability & Statistics (02201^), Psychology (04254^), Sociology (04258^), Economics (04201^), U.S. Government (04151^), Civics (04161^),
Consumer Law (04163), Legal Systems (04165), Technical Writing (01105), Speech I (01151^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^), Youth Apprenticeship (80020) Service Learning (22104) Youth Internships (80018^)



Principles of Public Management & Administration

Career Cluster	Government and Public Administration
Course Code	15201
Prerequisite(s)	Civics (04161) and/or US Government Comprehensive (04151) suggested prerequisites
Credit	0.5
Program of Study and Sequence	Principles of Public Management & Administration —cluster course in Government and Public Administration Cluster
Student Organization	Student Government, CTSO's, Speech, Debate
Coordinating Work-Based Learning	Youth Internship, Service Learning, or Senior Experience
Industry Certifications	National Career Readiness Certificate
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Government & Public Administration Cluster Endorsement
Resources	

Course Description:

Principles of Public Management & Administration introduces students to the knowledge and technical skills of working in public service and serving the general public in a government or public administration career.

Program of Study Application:

Principles of Public Management & Administration is a first-level pathway course in the Government & Public Administration career cluster and related pathways.

Course Standards

PPMA 1 Students will examine the management and administration of public resources.

<i>Webb Level</i>	<i>Sub-indicator</i>
Level 1 – Recall	PPMA 1.1 Explore different approaches to public management and administration.
Level 3 – Strategic Thinking	PPMA 1.2 Define and differentiate between public goods and services (e.g., national resources, national defense, and other public goods) and private goods and services (clothing, cars, and similar goods typically considered to be private in nature).
Level 3 – Strategic Thinking	PPMA 1.3 Investigate theories as to why the government or the private sector is better suited to provide specific goods or services.
Level 4 – Extended Thinking	PPMA 1.4 Determine cause and effect of privatization and/or nationalization of goods and services.

PPMA 2 Students will analyze systemic relationships among government and the service of public administration in achieving the public will.

<i>Webb Level</i>	<i>Sub-indicator</i>
Level 2 – Skill/ Concept	PPMA 2.1 Research and outline philosophies of government stewardship in public management and administration.
Level 3 – Strategic Thinking	PPMA 2.2 Examine public administration systems/agencies of government and their ability to administer laws and policies developed through the legislative or executive branches of government.
Level 2 – Skill/ Concept	PPMA 2.3 Compare and contrast organizational similarities and differences among national, state, and local governmental and public administrative systems/agencies and private sector providers.

PPMA 3 Students will examine the process of policy making and implementation in government at local, state, and national levels.

<i>Webb Level</i>	<i>Sub-indicator</i>
Level 2 – Skill/ Concept	PPMA 3.1 Compare and contrast the rights and duties of citizens at the local, state, and national levels by consulting specific government legislation and related texts.
Level 2 – Skill/ Concept	PPMA 3.2 Differentiate the terms: laws, policy, governance, regulation, domestic policy, and foreign policy.
Level 2 – Skill/ Concept	PPMA 3.3 Identify components of the policy making process (assumptions, purposes, outcomes/solutions, and communication techniques) used by government agencies to address contemporary issues.

PPMA 4 Students will investigate careers in the field of Public Management and Administration.

<i>Webb Level</i>	<i>Sub-indicator</i>
Level 4 – Extended Thinking	PPMA 4.1 Design a postsecondary career plan in a field of public management and administration.
Level 4 – Extended Thinking	PPMA 4.2 Analyze career assessment results and align to a field in public management and administration.
Level 4 – Extended Thinking	PPMA 4.3 Demonstrate the application of professional practices and skills specific to government and public administration workplaces.
Level 1 – Recall	PPMA 4.4 Compare and contrast careers that have both public and private employment opportunities.
Level 4 – Extended Thinking	PPMA 4.5 Create career profiles for an occupation in each level of government (local, state, and federal), including a job description and job requirements (education and experience levels, licensure/credentials, and skills and dispositions needed), based on interviews with individuals who work in the field of government and public administration.

PPMA 5 Students will review legal requirements to meet the public's expectations for government and public administration.

<i>Webb Level</i>	<i>Sub-indicator</i>
Level 1 – Recall	PPMA 5.1 Examine the roles, contributions, and involvement in public administration for the development and maintenance of public infrastructure (i.e., education, taxation, etc.).
Level 1 – Recall	PPMA 5.2 Compose a list of services typically provided by local, state, and federal governments
Level 1 – Recall	PPMA 5.3 Identify the role of nonprofit organizations in providing services not available through government agencies.
Level 3 – Strategic Thinking	PPMA 5.4 Analyze privacy laws, safe practices, and requirements in local, state, and federal governments.
Level 2 – Skill/Concept	PPMA 5.5 Evaluate public disclosure laws as they relate to complying with open records requests.



JROTC – Junior Reserve Officers' Training Corps

Career Cluster	Government and Public Administration
Course Codes	09051 JROTC I 09052 JROTC II 09053 JROTC III 09054 JROTC IV
Prerequisite(s)	None
Credit	1.0 each
Program of Study and Sequence	JROTC I – JROTC II - JROTC III – JROTC IV
Student Organization	JROTC
Coordinating Work-Based Learning	NA
Industry Certifications	NA
Dual Credit or Dual Enrollment	NA
Teacher Certification	JROTC Instructor
Resources	

The **Junior Reserve Officer Training Corps (JROTC)**, commonly pronounced [JAY-rot-see](#) is a [federal](#) program sponsored by the [United States Armed Forces](#) in [high schools](#) and also in some [middle schools](#) across the United States and at US military bases across the world. The program was originally created as part of the [National Defense Act of 1916](#) and later expanded under the 1964 ROTC Vitalization Act.

CFR National Defense title states in part that JROTC should "provide meaningful leadership instruction of benefit to the student and of value to the Armed Forces. ...Students will acquire: (1) An understanding of the fundamental concept of leadership, military art and science, (2) An introduction to related professional knowledge, and (3) An appreciation of requirements for national security. The dual roles of citizen/soldier and soldier/citizen are studied. ... These programs will enable cadets to better serve their country as leaders, as citizens, and in military service should they enter it.

Six of the eight branches of the [Uniformed services of the United States](#) maintain a Junior Reserve Officers' Training Corps, organized into units. There are a total of 3,275 units:

- 1,600 [Army](#) AJROTC units^[12]
- 794 [Air Force](#) AFJROTC units^[13]
- 619 [Navy](#) NJROTC units^[14]
- 260 [Marine Corps](#) MCJROTC units^[15]
- 10 [Space Force](#) SFJROTC units ^{[16][17]}
- 2 [Coast Guard](#) CGJROTC units (2 more planned to commence in 2021)^[18]

Prior to 1967 the number of units was limited to 1,200. The cap was increased to 1,600 units in 1967 and again to 3,500 units in 1992; the statutory limitation on the number of units was struck from the law in 2001.^{[19][20]} Their goal was to reach 3,500 units by February 2011 by encouraging program expansion into educationally and economically deprived areas.^[21]

The four components of the JROTC Program are: **classroom instruction, leadership labs, field training exercises, and physical fitness training**. Classes introduce cadets to military customs, courtesies, and traditions as well as military history and Army organization.

JROTC aims to **provide military education and training for students to mobilize them for national defense preparedness**.

There are other extracurricular activities that the JROTC's programs provide for their cadets, including trips to military installations, ROTC college programs, and other sites that give the cadets a look at the military community. During the school year, there are regional competitions between JROTC units, with testing in all areas of military, naval, and aerospace science. Some units organize special visits to US military bases during school breaks. There are also many summertime "leadership academies" for cadets hosted by various military installations.^[47] These academies include the JROTC Leadership and Academic Bowl (JLAB), and JROTC Cadet Leadership Challenge (JCLC), a physical fitness competition.^[48]

CURRICULAR MATERIALS:

ARMY

<https://www.usarmyjrotc.com/>

Army JROTC Courses

Army JROTC 1: Leadership and Education Training (LET) - The Emerging Leader

Army JROTC 2: Leadership and Education Training (LET) - The Developing Leader

Army JROTC 3: Leadership and Education Training (LET) - The Supervising Leader

Army JROTC 4: Leadership Education and Training (LET) - The Managing Leader

NAVY

<https://www.netc.navy.mil/nstc/njrotc/>

NJROTC Curriculum Description

<https://www.netc.navy.mil/Commands/Naval-Service-Training-Command/NJROTC/Program-Information/>

AIR FORCE

Air Force JROTC

<https://www.airuniversity.af.edu/Holm-Center/AFJROTC/>

MARINES

Marine JROTC

<https://www.mcjrotc.marines.mil/>

SPACE FORCE

Space Force JROTC

<https://www.spoc.spaceforce.mil/News/Article-Display/Article/2913212/first-ussf-jrotc-in-california-established-in-transfer-ceremony>

Foundational CTE Courses

Career Exploration (22151[^]) Employability (22152[^]) Workplace Technology Skills (10004[^]) Leadership & Service (22101[^])

Cluster Courses

Health Science Careers I – Exploration (14001[^]) Health Science Careers II - Engagement (14002[^]) Medical Terminology (14154[^]) MS PLTW Biomed (03071)

Pathway Courses

<i>Therapeutic Services Pathway</i>	<i>Diagnostic Services Pathway</i>	<i>Health Informatics Pathway</i>	<i>Biotechnology Research & Development Pathway</i>
Gateway to Certified Nursing Assistant (14051) Health Science Careers I – Exploration (14001 [^]) Introduction to Emergency Medical Services (14055) Introduction to Sports Medicine (14062 [^]) Introduction to Pharmacy Technician (14152)	Introduction to Medical Diagnostics (14102 [^]) Health Science Careers I – Exploration (14001 [^]) Medical Terminology (14154 [^]) Introduction to Health Informatics (14157)	Introduction to Pharmacy Technician (14152) Introduction to Health Informatics (14157)	
<i>PLTW Biomedical Sciences:</i>	<i>PLTW Biomedical Sciences:</i>	<i>PLTW Biomedical Sciences:</i>	<i>PLTW Biomedical Sciences:</i>
PLTW: Human Body Systems (03067)	PLTW: Medical Intervention (03068)	PLTW: Human Body Systems (03067)	PLTW: Biomedical Science (03066) PLTW: Biomedical Innovation (03070)

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Health Science Career Cluster.

Academic CTE Courses

Biology (03051[^]) Biology – Adv. Studies (03052) AP Biology (03056[^]) AP Chemistry (03106[^]) Anatomy & Physiology (03053[^]) Anatomy (03054) Physiology (03055)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019[^]) Youth Apprenticeship (80020) Service Learning (22104) Youth Internships (80018[^])

[^]Denotes course is available on the SD Virtual School (<http://www.sdv.s.k12.sd.us/>)



Introduction to Sports Medicine

Career Cluster	Health Science
Course Code	14062
Prerequisite(s)	Recommended: Anatomy and Physiology
Credit	1.0
Program of Study and Sequence	Cluster course – Introduction to Sports Medicine – other pathway courses in the Therapeutic Services pathway or capstone experience
Student Organization	Future Health Professionals (HOSA); Family, Career and Community Leaders of America (FCCLA), or Skills USA
Coordinating Work-Based Learning	Workplace tours, job shadowing, mentoring, internship
Industry Certifications	First Aid/Cardiopulmonary Resuscitation (CPR)/Automated External Defibrillator (AED)/First Aid
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; *Health Science Education; Therapeutic and Support Services Pathway Endorsement
Resources	American College of Sports Medicine http://acsm.org/about-acsm ; My Fitness Pal www.myfitnesspal.com ; Choose MyPlate www.myplate.gov ; Family, Career and Community Leaders of America (FCCLA) Sports Nutrition STAR event; HOSA and SkillsUSA, AHA, Red Cross

Course Description

Introduction to Sports Medicine is designed for students interested in fields such as athletic training, physical therapy, medicine, fitness, exercise physiology, kinesiology, nutrition and other sports medicine related fields. This class includes both classroom work and hands-on application in order to provide students with an avenue to explore these fields. Through these connections students will understand the importance that exercise, nutrition, treatment modalities, and rehabilitation play in athletic health. Students will study basic anatomy and the psychological impact of athletic injuries along with assessment and treatment techniques as they apply to athletic injuries.

Program of Study Application

Introduction to Sports Medicine is a pathway course in the Health Science career cluster, Therapeutic Services pathway. The course would follow participation in one or more cluster courses. Introduction to Sports Medicine would prepare a student to participate in further pathway courses in the Therapeutic Services pathway or a capstone experience.

Course Standards

ISM 1: Identify the fundamental aspects of medical terminology, the human body systems, kinesiology and careers related to sports medicine.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ISM 1.1 Distinguish differences among careers within sports medicine and explain in detail the education level, credentialing/licensure requirements.
Two Skill/Concept	ISM 1.2 Interpret medical terms and abbreviations to communicate information.
One Recall	ISM 1.3 Identify basic structures and functions of human body systems.
Four Extended Thinking	ISM 1.4 Analyze basic concepts of kinesiology in relation to athletic performance.

ISM 2: Understand injury prevention principles and performance enhancement philosophies

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Planning	ISM 2.1 Develop a nutrition and hydration plan for an athlete that addresses personal healthy behaviors.
Two Skill/Concept	ISM 2.2 Describe injury prevention strategies.
Two Skill/Concept	ISM 2.3 Explore and identify safe training practices in sports management.
Three Strategic Thinking	ISM 2.4 Compare and contrast performance enhancement philosophies.

ISM 3: Explore and understand common sports injuries, injury management and treatment techniques.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	ISM 3.1 Recognize and explain common injuries and conditions that impact athletic performance.
Three Strategic Thinking	ISM 3.2 Apprise common sports injuries to differentiate treatment modalities.
Four Extended Thinking	ISM 3.3 Perform proper treatment techniques of common sports injuries through hands-on application.

ISM 4: Explore the psychological impact of injury and the healing process on an individual.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	ISM 4.1 Describe basic principles of sports psychology.
Three Strategic Thinking	ISM 4.2 Explain possible adaptations that can be made to exercise programs to account for different clients' needs.



Gateway to Certified Nursing Assistant

Career Cluster	Health Science
Course Code	14051
Prerequisite(s)	None
Credit	1.0
Program of Study and Sequence	Cluster course – Gateway to Certified Nursing Assistant – other pathway courses in the Therapeutic Services pathway or capstone experience
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Mentoring, Job Shadowing, Internship, Workplace Tours,
Industry Certifications	Certified Nursing Assistant
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; Therapeutic & Support Services Pathway Endorsement; *Health Science Education.
Resources	State and National Future Health Professionals (HOSA) Conference (Competitive Events), State and National Skills USA Conference, Certified Nursing Assistant Candidate Handbook, Omnibus Budget Reconciliation Act, South Dakota Board of Nursing, South Dakota Healthcare Association.

Important: In order for students to be able to sit for the CLNA Exam after this course it is highly encouraged that districts and teachers work with their local healthcare industry partners and the SD Board of Nursing to ensure that all criteria for eligibility are met. A licensed nurse will need to be involved in teaching this course in order to assure meeting industry certification requirements.

Course Description

Gateway to Certified Nursing Assistant is designed to empower high school students to take charge of and set a course for their future. It will prepare them to graduate with marketable skills and a real-world work connection. Students will be informed of the roles of the Certified Nursing Assistant focusing on direct patient care. After completing this portion for the Certified Nursing Assistant course, a student would need only to pass the state examinations in order to become a Certified Nursing Assistant. Clinical hours are required to meet certification requirements.

Program of Study Application

Gateway to Certified Nursing Assistant is the first pathway course in the Health Science career cluster, Therapeutic Services pathway. The course would follow participation in one or more cluster courses. Completion of Gateway to Certified Nursing Assistant would prepare a student to participate in further pathway courses in the Therapeutic Services pathway or a capstone experience.

Course Standards

CNA 1: Discuss the Certified Nursing Assistant (CNA) certification process and roles of the CNA in the healthcare environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	CNA 1.1 Discuss laws and regulations that govern the work and certification of the nurse assistants.
One Recall	CNA 1.2 Identify the job duties and requirements of a nurse assistant.

CNA 2: Identify and implement principles related to infection control and basic safety/emergency situations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CNA 2.1 Demonstrate Certified Nursing Assistant's role in infection control procedures in reference to Centers for Disease Control, Occupational Safety Health Administration, and National Institute of Health.
Two Skill/Concept	CNA 2.2 Discuss and demonstrate safety/emergency protocols and procedures within the healthcare environment

CNA 3: Measure and record patient/resident's health-related vital data/statistics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CNA 3.1 Collect and document baseline information, including vital signs, height and weight.
Two Skill/Concept	CNA 3.2 Identify normal ranges for vital signs, and list factors which can affect vital signs.

CNA 4: Understand patient/resident's environment, basic human needs, and the importance of hygiene.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CNA 4.1 Identify the importance of basic physical human needs of the patient/resident.
Two Skill/Concept	CNA 4.2 Identify the importance of the patient/resident's psychosocial needs.

CNA 5: Understand care involving cognitive impairment, mental illness, and death and dying.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CNA 5.1 Identify effective strategies when caring for cognitively altered and mentally ill patients.
Two Skill/Concept	CNA 5.2 Summarize the basic needs and care during patient/resident's death and grieving process.



Health Science Careers I - Exploration

Career Cluster	Health Science
Course Code	14001
Prerequisite(s)	None
Credit	1.0
Program of Study and Sequence	Foundation Course – Health Science Careers I – Health Science Careers II or Medical Terminology – Pathway Course
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Job shadowing, mentoring, service learning, workplace tours
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; *Health Science Education
Resources	State and National Future Health Professionals, Conference, State and National Skills USA Conference

Course Description

Health Science Careers I explores the current interprofessional education (IPE) teamwork approach in health science and career options in an ever-expanding healthcare environment. Students in the course will evaluate unique abilities and explore personal career aspirations. In addition, the student will be exposed to legal, ethical, and safety implications inherent to providing high quality patient care.

Program of Study Application

Health Science Careers I is the first cluster course in the Health Science career cluster. Completion of Health Science Careers I: Exploration prepares a student to participate in Health Science Careers II or Medical Terminology and then pathway courses in any of the Health Science pathways: Biotech Research and Development, Therapeutic Services, Health Informatics, Diagnostics, or Support Services.

Course Standards

HSI 1: Understand the healthcare setting networks and roles and responsibilities.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HSI 1.1 Differentiate between private and public/government healthcare settings (managed care).
Two Skill/Concept	HSI 1.2 Collaborate and communicate effectively with colleagues, patients/residents, and/or family members.
Three Strategic Thinking	HSI 1.3 Identify positive and negative personal traits in a member of the healthcare setting.

HSI 2: Identify health science career pathways.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HSI 2.1 Identify and compare health science career pathways.
One Recall	HSI 2.2 Demonstrate knowledge of levels of education and credentialing requirements for a variety of health science careers of interest.
One Recall	HSI 2.3 Explore and demonstrate knowledge of employment opportunities, workplace environments, and career growth potential.

HSI 3: Examine legal/ethical responsibilities and limitations of the healthcare worker.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HSI 3.1 Understand legal/ethical issues, religious and cultural diversity and their impacts on health care.
Two Skill/Concept	HSI 3.2 Explore scope of practice state-specific requirements and a variety of professional standards including the American Medical Association, American Nurse Association, American Dental Association.
Three Strategic Thinking	HSI 3.3 Examine the implications of Health Insurance Portability and Accountability Act (HIPAA) for healthcare professionals.
Four Extended Thinking	HSI 3.4 Analyze Patient/Residents' Bill of Rights and advanced directives.

HSI 4: Understand and demonstrate safety practices in the healthcare environment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	HSI 4.1 Apply principles of body mechanics and ergonomics.
Two Skill/Concept	HSI 4.2 Identify common safety hazards in the healthcare environment including patient/resident, community, and healthcare worker settings.



Health Science Careers II: Engagement

Career Cluster	Health Science
Course Code	14051
Prerequisite(s)	Health Science Careers I: Exploration
Credit	1.0
Program of Study and Sequence	Foundation Course – Health Science Careers I – Health Science Careers II – Medical Terminology or Pathway Course – Capstone Experience
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Workplace tours, job shadowing, mentoring, service learning, internship
Industry Certifications	First Aid, Cardiopulmonary Resuscitation (CPR), Automated External Defibrillator (AED) , Certified Nurse Assistant (CNA).
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; *Health Science Education
Resources	State and National Future Health Professionals (HOSA) Conference (Competitive events), State and National Skills USA Conference, American Red Cross, and American Heart Association.

Course Description

Health Science Careers II: Engagement will help a student discover and develop marketable and real-world skills that are essential to all health care workers. This course will cover real world skills such as infection control, disease, diagnosis, treatment, hands on skills, and documentation.

Program of Study Application

Health Science Careers II: Engagement is the second cluster course in the Health Science career cluster. Completion of Health Science Careers II: Engagement prepares a student to participate in Medical Terminology and/or a pathway courses in any of the Health Science pathways: Biotech Research and Development, Therapeutic Services, Health Informatics, Diagnostics or Support Services.

Course Standards

HS2 1: Identify and apply principles of infection control.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HS2 1.1 Understand and Investigate the chain of infection.
Four Extended Thinking	HS2 1.2 Apply the prevention of pathogen transmission.

HS2 2: Discuss disease, diagnosis, and treatment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HS2 2.1 Differentiate disease concept with reference to Centers for Disease Control and National Institute of Health.
Three Strategic Thinking	HS2 2.2 Evaluate and assess patient/residents' health.
Two Skill/Concept	HS2 2.3 Examine current treatment modalities for conditions including but not limited to obesity, heart disease, cancer, and respiratory.

HS2 3: Demonstrate hands-on patient/residents' care skills.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HS2 3.1 Apply procedures for monitoring, measuring, and recording vital signs.
Two Skill/Concept	HS2 3.2 Apply First Aid/Cardiopulmonary Resuscitation (CPR), and Automated External Defibrillator (AED)
Four Extended Thinking	HS2 3.3 Demonstrate knowledge of direct patient/residents' care skills.

HS2 4: Demonstrate documentation standards and findings.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HS2 4.1 Demonstrate use of technological documentation standards by entering data on the electronic medical record or paper.
Three Strategic Thinking	HS2 4.2 Differentiate between subjective and objective healthcare data to communicate patient/residents' status.

HS2 5: Utilize medical mathematics skills needed in healthcare work.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HS2 5.1 Apply mathematical computations related to healthcare procedures.
Three Strategic Thinking	HS2 5.2 Analyze diagrams, charts, graphs and tables to interpret healthcare data.



Introduction to Pharmacy Technician

Career Cluster	Health Science
Course Code	14152
Prerequisite(s)	Currently enrolled in 12th grade
Credit	1.0
Program of Study and Sequence	Cluster course – Gateway to Certified Nursing Assistant – Pharmacy Technician – other pathway courses in the Therapeutic Services pathway or capstone experience
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Work-Based Learning: Job Shadowing and Internship
Industry Certifications	Certified Pharmacy Technician (CPhT)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	CTE certified with Health Science Endorsement
Resources	South Dakota Board of Pharmacy and local pharmacist.

Course Description

The Pharmacy Technician course prepares students to assist pharmacists. This includes learning about the roles and responsibilities of the Pharmacy Technician, safety measures, drug dosage calculations, and identification of various drugs and their effects on the human body. Students will also learn how to perform a wide range of duties in retail, hospital, and home care. The Pharmacy Technician course will equip the student to pass the national certification exam.

Program of Study Application

Pharmacy Technician is a pathway course in the Health Science career cluster, Therapeutic Services pathway. The course would follow participation in one or more cluster courses and/or Gateway to Certified Nursing Assistant. Participation in Pharmacy Technician would prepare a student to participate in further pathway courses in the Therapeutic Services pathway or a capstone experience.

Course Standards

PhT 1: Understand the roles and responsibilities of the Pharmacy Technician and governing laws.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PhT 1.1 Understand the roles and responsibilities of a pharmacy technician.
Two Skill/Concept	PhT 1.2 Interpret the laws and regulations involved in dispensing medication including controlled substances.
Two Skill/Concept	PhT 1.3 Apply the requirements for dispensing medication in accordance with Federal and South Dakota law.
One Recall	PhT 1.4 List the various types of reimbursement for prescription coverage.

PhT 2: Understand safety measures as they pertain to preparing prescriptions and maintaining inventory.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PhT 2.1 Identify the steps involved in preparing and processing prescriptions.
Two Skill/Concept	PhT 2.2 Apply safety measures to prevent prescription errors and recognize the importance of reporting errors.
One Recall	PhT 2.3 Identify the process of maintaining pharmacy inventory.

PhT 3: Understand drug dosage calculations and preparation of prescriptions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PhT 3.1 Solve dimensional math problems.
Two Skill/Concept	PhT 3.2 Convert between metric and apothecary measurements.
One Recall	PhT 3.3 Calculate dosage.
One Recall	PhT 3.4 Identify characteristics of dosage forms.
One Recall	PhT 3.5 Identify common terminology and abbreviations related to pharmacy.

PhT 4: Identify various drugs and their effects on the human body.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PhT 4.1 Define therapeutic effects of medications.
One Recall	PhT 4.2 Recognize common medications by brand and generic names.
One Recall	PhT 4.3 Identify the most common adverse effects of drugs.
One Recall	PhT 4.4 Identify common drug interactions of drugs.
One Recall	PhT 4.5 Identify monitoring parameters or labs for drug therapy.



Introduction to Emergency Medical Services

Career Cluster	Health Science
Course Code	14055
Prerequisite(s)	Medical Terminology recommended
Credit	1.0
Program of Study and Sequence	Cluster course – Introduction to Emergency Medical Services – other pathway courses in the Therapeutic Services pathway or capstone experience
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Workplace tours, job shadowing, mentoring, service learning, internship
Industry Certifications	First Aid/Cardiopulmonary Resuscitation (CPR)/Automated External Defibrillator (AED)/First Aid through American Red Cross or American Heart Association as appropriate
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; Therapeutic & Support Services Pathway Endorsement; * Health Science Education
Resources	American Red Cross: www.redcross.org , American Heart Association www.heart.org

Important: In order for students to be able to sit for the EMT Exam after this course it is highly encouraged that districts and teachers work with their local healthcare industry partners and the SD Department of Health to ensure that all criteria for eligibility are met. Licensed personnel will need to be involved in teaching this course in order to assure meeting industry certification requirements.

Course Description

Introduction to Emergency Medical Services is designed to expose students to the various career opportunities in the Emergency Medical Services field. Emergency care services are necessary for the safety of the community. A network of services are coordinated to provide aid and medical assistance from primary response to definitive care, involving personnel trained in the rescue, stabilization, transportation, and advanced treatment of traumatic or medical emergencies. Potential career opportunities may include emergency medical dispatch, first medical responder, ambulance personnel, medium and heavy rescue equipment, and paramedic units. Upon completion of this course, students will be trained in First Aid, Cardiopulmonary Resuscitation (CPR) and Automatic External Defibrillator (AED).

Program of Study Application

Introduction to Emergency Medical Services is a pathway course in the Health Science career cluster, Therapeutic Services pathway. The course would follow participation in one or more cluster courses and/or Gateway to Certified Nursing Assistant. Introduction to Emergency Medical Services would prepare a student to participate in further pathway courses in the Therapeutic Services pathway or a capstone experience.

Course Standards

EMS 1: Explore roles, responsibilities, and professionalism of Emergency Medical Services (EMS) personnel.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EMS 1.1 Distinguish differences among careers within EMS and explain in detail the education level, credentialing/licensure requirements.
Three Strategic Thinking	EMS 1.2 Demonstrate emotional support to patient, bystanders, or other responders.
Three Strategic Thinking	EMS 1.3 Investigate medical and legal standards in correlation with the Health Insurance Portability & Accountability Act (HIPAA).
Four Extended Thinking	EMS 1.4 Apply concepts related to professional attitude and appearance.

EMS 2: Demonstrate skills in first aid, cardiopulmonary resuscitation (CPR) and automated external defibrillation (AED) certification standards set by the American Heart Association or the American Red Cross.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EMS 2.1 Understand how to perform First Aid for Students and/or CPR for Students and/or how to use an AED.

EMS 3: Determine the necessity of emergency medical care for a variety of patients with varied medical conditions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EMS 3.1 Identify emergency medical treatment protocol.



Introduction to Health Informatics & IT

Career Cluster	Health Science
Course Code	14157
Prerequisite(s)	Recommend taking Medical Terminology first
Credit	1
Program of Study and Sequence	Cluster Course, Introduction to Health Informatics, Human Body Systems or Capstone Course
Student Organization	Future Health Professionals (HOSA), SkillsUSA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement
Resources	

Course Description

Health Informatics & IT is a multidisciplinary approach to automated collection, using and sharing of personal and epidemiologic health information. The Health Informatics & IT course will introduce students to the necessary skills and knowledge to work in places such as medical groups, hospitals, clinics, health insurance organizations, research, hardware and software vendors, internet companies, and many others.

Program of Study Application

Introduction to Health Informatics & IT is the first pathway course in the Health Science career cluster, Health Informatics pathway. The course would follow participation in one or more cluster courses. Completion of Introduction to Health Informatics would prepare a student to participate in further pathway courses in the Health Informatics pathway or a capstone experience.

Course Standards

HI 1: Communicate health information accurately and within legal and regulatory guidelines, upholding the strictest standards of confidentiality.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HI 1.1 Apply accuracy, effectiveness, and timeliness to the transfer of information.
Two Skill/Concept	HI 1.2 Summarize how legal and regulatory requirements apply to the transfer of information.
Two Skill/Concept	HI 1.3 Distinguish who in the organization needs information and when they need it.
Three Strategic Thinking	HI 1.4 Organize recorded information and other documents within the Health Insurance Portability and Accountability Act (HIPAA) protocols to ensure confidentiality and privacy.
One Recall	HI 1.5 Communicate information ensuring confidentiality of content is maintained.

HI 2: Describe the content and diverse uses of health information.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HI 2.1 Interpret and extract information from medical records and documents.
Two Skill/Concept	HI 2.2 Collect appropriate, accurate information including proper codes to record charges for reimbursement.
One Recall	HI 2.3 Identify and apply accurate medical terminology.
Three Strategic Thinking	HI 2.4 Investigate the need for requesting further clarification when transcribing/transferring information that may be unclear.
Four Extended Thinking	HI 2.5 Analyze and apply information for regulatory and legal purposes.

HI 3: Demonstrate the use of systems used to capture, retrieve, and maintain confidential health information, including electronic health records, from internal and external sources.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HI 3.1 Formulate and accurately document required information.
Two Skill/Concept	HI 3.2 Organize information that has been collected.
Three Strategic Thinking	HI 3.3 Differentiate the purposes and audiences for whom information is collected.
Two Skill/Concept	HI 3.4 Prepare accurate documentation for various audiences within legal and regulatory requirements, as requested.
One Recall	HI 3.5 Disseminate information to various audiences using systems and guidelines within the facility.
Two Skill/Concept	HI 3.6 Organize and maintain a records storage system within legal requirements and protocols.



Introduction to Medical Diagnostics

Career Cluster	Health Science
Course Code	14102
Prerequisite(s)	None
Credit	1.0
Program of Study and Sequence	Cluster course – Introduction to Medical Diagnostics – Medical Intervention or capstone experience
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, job shadowing, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Cluster Endorsement; Diagnostic Services Pathway Endorsement; *Health Science Education
Resources	Local healthcare facility

Course Description

Diagnostic services create a picture of the health status of a patient at a single point in time. Introduction to Medical Diagnostics will address tests and evaluations that aid in the detection, diagnosis, and treatment of disease, injury, or other physical conditions.

Program of Study Application

Introduction to Medical Diagnostics is the first pathway course in the Health Science career cluster, Diagnostics pathway. The course would follow participation in one or more cluster courses. Completion of Introduction to Health Informatics would prepare a student to participate in Medical Intervention or a capstone experience.

Course Standards

IMD 1: Investigate Diagnostic Pathway careers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IMD 1.1 Compare and contrast scope of practice of diagnostic careers.
One Recall	IMD 1.2 Identify educational requirements for specific careers.
One Recall	IMD 1.3 Identify workforce needs and compensation.
One Recall	IMD 1.4 Identify licensure, registration, or certification requirements.

IMD 2: Recognize skills necessary to work in any healthcare facility.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IMD 2.1 Summarize the Health Insurance Portability and Accountability Act (HIPAA) and how it provides confidentiality for healthcare information.
Two Skill/Concept	IMD 2.2 Demonstrate infection control standard precautions.
Two Skill/Concept	IMD 2.3 Apply and demonstrate professional appearance.

IMD 3: Understand the dynamics of a healthcare diagnostic workplace.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IMD 3.1 Identify workplace equipment, protocol, and procedures.
Two Skill/Concept	IMD 3.2 Demonstrate professional communication and teamwork.
Four Extended Thinking	IMD 3.3 Apply professional level patient care and interaction scenarios.



Medical Terminology

Career Cluster	Health Science
Course Code	14154
Prerequisite(s)	None
Credit	1.0
Program of Study and Sequence	Foundation Course – Health Science Careers I: Exploration – Health Science Careers II: Engagement or Medical Terminology – Pathway Course
Student Organization	Future Health Professionals (HOSA), Skills USA
Coordinating Work-Based Learning	Mentoring, workplace tours, service learning
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Health Science Career Cluster Endorsement; *Health Science Education
Resources	State and National Future Health Professionals (HOSA) Conference (Competitive Events), State and National Skills USA Conference

Course Description

Communication in the ever-expanding health care industry is a language unto itself. Medical Terminology consists of learning medically precise pronunciations, word clues, and terminology specific to human anatomy, physiology, disease, diagnosis and treatment. This medically integrated knowledge will be valuable for all levels of health care providers and members of the health care team. Medical Terminology is recommended for students in all health science pathways.

Program of Study Application

Medical Terminology is a second cluster course in the Health Science career cluster. Completion of Medical Terminology prepares a student to participate in Health Science Careers II and/or pathway courses in any of the Health Science pathways: Biotech Research and Development, Therapeutic Services, Health Informatics, Diagnostics or Support Services.

Course Standards

MT 1: Build and interpret medical terminology.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MT 1.1 Decipher and create medical terms using word roots, prefixes, and suffixes.
One Recall	MT 1.2 Demonstrate the importance, and practice the correct spelling, of medical terminology.
Two Skill/Concept	MT 1.3 Communicate patient/residents' care information utilizing medical terminology.

MT 2: Demonstrate use of medical terminology in relation to the human body.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MT 2.1 Utilize medical terminology associated with the human body and medical healthcare treatment.
Two Skill/Concept	MT 2.2 Understand body planes, directional terms, quadrants, and cavities using medical terminology.

MT 3: Utilize medical terminology to identify and interpret signs and symptoms of diseases and disorders.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MT 3.1 Utilize medical terminology to compare and contrast symptoms of diseases and disorders.
Two Skill/Concept	MT 3.2 Utilize medical terminology pertaining to diagnosis and treatment of diseases and disorders in patients/residents.

Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

MS Family & Consumer Sciences (19000^)
Introduction to Human Services (19001^)
Human Development: Prenatal through Toddlers (19052^)
Human Development: Preschool through School Age (19051^)
Human Development: Adolescence to Adulthood (19261^)
Personal Finance (19262^)
Entrepreneurial Skills (12061)

Pathway Courses

<i>Early Childhood Development & Services Pathway</i>	<i>Family & Community Services/Mental Health Services Pathway</i>	<i>Personal Care Services Pathway</i>	<i>Consumer Services Pathway</i>
Nutrition & Wellness (19253^)	Nutrition and Wellness (19253^)	Business Management (12052)	Consumer Resource Management (19264)
Nutritional Sciences (16054)	Nutritional Sciences (16054)	Accounting I (12104^)	Accounting I (12104^)
Lifespan Connections (19255^)	Lifespan Connections (19255^)	Nutrition and Wellness (19253^)	Business Law (12054^)
SD Educators for Tomorrow (19152^)	Business Law (12054^)	Business Law (12054^)	Business Management (12052)
	Fundamental Food Concepts (16052)		

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Human Services Career Cluster.

Supporting Academic Courses

Psychology (04254^)
Sociology (04258^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)



Introduction to Human Services

Career Cluster	Human Services
Course Code	19001
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Foundation course – Introduction to Human Services – pathway course – capstone experience
Student Organization	FCCLA, SkillsUSA, Educators Rising
Coordinating Work-Based Learning	Job Shadowing, Mentoring, Internships, Entrepreneurships, Service Learning, Workplace Tours, Apprenticeship
Industry Certifications	ServSafe, CNA, First Aid/CPR, Babysitting Certification, NCRC
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Human Services Cluster Endorsement; FACS Endorsement; FACS Education
Resources	FCCLA Career Investigation STAR Event

Course Description

Introduction to Human Services focuses on the pathways and careers in the Human Services cluster. The course allows students to identify and compare their personal attributes with careers in this cluster. It will also explore the professional behaviors, skills and abilities necessary for human services careers.

Program of Study Application

Introduction to Human Services is a cluster course in the Human Services career cluster. A student can participate in a foundation course prior to participation in this course. Introduction to Human Services prepares a student to participate in pathway courses in any of the Human Services pathways: consumer services, personal care services, family and community services/mental health services, or early childhood development and services.

Course Standards

IHS 1: Explore personal attributes for a career in Human Services.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IHS 1.1 Describe personal values, interests, and personalities.
One Recall	IHS 1.2 Identify personal abilities, learning styles and skills.
Three Strategic Thinking	IHS 1.3 Compare personal attributes to those needed for careers in Human Services.

IHS 2: Investigate careers in Human Services.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IHS 2.1 Investigate the Human Service Pathways.
Three Strategic Thinking	IHS 2.2 Examine current social issues and support agencies related to each of the Human Service pathways.

IHS 3: Examine professional behaviors, skills and abilities necessary in Human Service careers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IHS 3.1 Summarize ethical, legal, safety, and diversity issues in Human Services.
Two Skill/Concept	IHS 3.2 Demonstrate effective management skills.
Four Extended Thinking	IHS 3.3 Analyze the importance of a professional image and professional behavior.
Two Skill/Concept	IHS 3.4 Demonstrate effective communication and conflict resolution strategies.



Consumer Resources and Management

Career Cluster	Human Services
Course Code	19264
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Foundation course – Introduction to Human Services – Accounting I – Consumer Resources and Management – additional pathway course – capstone experience
Student Organization	FCCLA, DECA, FBLA
Coordinating Work-Based Learning	Internships, Job Shadows, Guest Speakers, Field Trips
Industry Certifications	National Career Readiness Certification (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Human Services Cluster Endorsement; Consumer Services Pathway Endorsement; FACS Endorsement; FACS Education
Resources	USA.gov; Recalls.gov; FCCLA Star Events, Food Innovation, and Entrepreneurship, Public Policy Advocate, Repurpose and Redesign, Sustainability Challenge, Consumer Math Challenge, Consumer Rights (Knowledge Bowl), Career Investigation

Course Description

Consumer Resources and Management teaches students to understand consumer practices, consumer responsibilities, and resource management; how these concepts impact and are applied to family, personal and work life; and career opportunities in the consumer services pathway. In this course, students will learn consumer advocacy such as consumer rights and responsibilities; consumer communications, financial management strategies; and conservation and sustainability practices.

Program of Study Application

Consumer Resources and Management is a pathway course in the Human Services career cluster, Consumer Services and Personal Care Services pathways. A student would participate in Introduction to Human Services prior to participation in this course. Consumer Resources and Management prepares a student to participate in additional pathway courses in the consumer services or personal care services pathways.

Course Standards

CA 1: Investigate careers in Consumer Services.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	CA 1.1 Identify the Consumer Services Pathway.
Three Strategic Thinking	CA 1.2 Examine current social issues and support agencies related to the Consumer Services pathway.

CA 2: Examine rights and responsibilities of consumers.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CA 2.1 Summarize consumer rights and responsibilities.
Three Strategic Thinking	CA 2.2 Investigate consumer protection laws, regulations and advocacy groups.
Three Strategic Thinking	CA 2.3 Apply strategies to reduce risks of consumer fraud.
Three Strategic Thinking	CA 2.4 Investigate procedures to protect the health and safety of consumers.

CA 3: Assess the factors that influence consumer relationships.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	CA 3.1 Examine the impact of values, relationships and resources on consumer decision making.
Three Strategic Thinking	CA 3.2 Investigate consumer trends for sensitivity to cultural, socio-economic, religious, generational, disability, and gender issues.
Two Skill/Concept	CA 3.3 Review ethical and legal concerns related to consumer and business actions.
Three Strategic Thinking	CA 3.4 Assess effects of advertising and technology on consumer decisions.

CA 4: Demonstrate management of individual and family resources such as food, clothing, shelter, health care, recreation, transportation, time, and human capital.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	CA 4.1 Assess how individuals and families make healthy and sustainable choices to satisfy needs and wants.
Three Strategic Thinking	CA 4.2 Justify decisions made about food, nutrition, housing, clothing, and healthcare.
Four Extended Thinking	CA 4.3 Apply financial management and planning skills to meet individual and family needs.

Fundamental Food Concepts

Career Cluster	Hospitality and Tourism
Course Code	16052
Prerequisite(s)	N/A
Credit	0.5
Program of Study and Sequence	Foundational Course – Fundamental Food Concepts – Pathway Courses – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA)
Coordinating Work-Based Learning	Workplace Tours, Mentoring,
Industry Certifications	N/A
Dual Credit or Dual Enrollment	N/A
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Pathway Endorsement
Resources	Guide to Good Food; Food for Today; www.ChooseMyPlate.org ; www.igrow.org

Course Description:

Fundamental Food Concepts will explore safe and effective basic food preparation. Students apply food selection and preparation guidelines.

Program of Study Application

Fundamental Food Concepts is a cluster course in the Hospitality and Tourism career cluster.

Course Standards**IFP 1 Students will demonstrate food safety and sanitation procedures.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	IFP 1.1 Apply established safety rules and guidelines to maintain a safe working environment	
Level 1: Recall & Reproduction	IFP 1.2 Identify proper first-aid procedures for cuts, burns, and electrical shock	
Level 1: Recall & Reproduction	IFP 1.3 Identify health and hygiene best practices for food handling, e.g. handwashing; grooming and hygiene	
Level 1: Recall & Reproduction	IFP 1.4 Identify and apply sanitation rules and regulations	
Level 1: Recall & Reproduction	IFP 1.5 Identify methods that prevent food-borne illnesses and contamination	

Notes

IFP 2 Students will apply skills related to kitchen equipment and management.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall & Reproduction	IFP 2.1 Identify types, use and care of kitchen equipment	
Level 1: Recall & Reproduction	IFP 2.2 Identify food measurement terminology and abbreviations	
Level 2: Skill/Concept	IFP 2.3 Demonstrate proper measuring techniques	
Level 2: Skill/Concept	IFP 2.4 Apply mathematic concept through equivalents, recipe adjustments and conversions	
Level 1: Recall & Reproduction	IFP 2.5 Identify basic food preparation terminology	
Level 2: Skill/Concept	IFP 2.6 Practice management skills, e.g. shopping lists, table settings, time management, budgeting, nutritional needs	

Notes

IFP 3 Students will apply food selection and preparation guidelines while preparing foods.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall & Reproduction	IFP 3.1 Identify components of selecting food products	www.ChooseMyPlate.gov www.sparkspeople.gov
Level 2: Skill/Concept	IFP 3.2 Demonstrate preparation methods for basic food products, e.g. quick breads, yeast breads, eggs, fruit smoothies, soups, salads, open-faced sandwiches	

Notes

Career Cluster: Hospitality & Tourism

Course: Fundamental Food Concepts

IFP 4 Students will identify career pathways within the food service industry.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall & Reproduction	IFP 4.1 Recognize employment opportunities within the food service industry	SDMyLife
Level 1: Recall & Reproduction	IFP 4.2 Explore education and training opportunities in the food service industry	

Notes



Lifespan Connections

Career Cluster	Human Services
Course Code	19255
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Foundation course – Introduction to Human Services – Lifespan Connections – additional pathway course – capstone experience
Student Organization	FCCLA, Educators Rising
Coordinating Work-Based Learning	Internships, Job Shadows, Service Learning, Mentoring, Workplace Tours, Entrepreneurship
Industry Certifications	First Aid/CPR, Babysitting Certification (Red Cross), CNA, NCRC, OSHA
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Human Services Cluster Endorsement; Early Childhood Development Pathway Endorsement; Counseling, Mental Health and Community Services Pathway Endorsement; FACS Endorsement; FACS Education
Resources	FCCLA Interpersonal Communications STAR Event, Families First FCCLA National Program, Focus on Children STAR Event

Course Description

Lifespan Connections examines the role and dynamics of family, work, and other significant relationships. Through this course, students will analyze healthy relationships with children and adults of all ages in the context of family and workplace. The course will also cover strategies and resources to meet the needs of all individuals, families and communities.

Program of Study Application

Lifespan Connections is a pathway course in the Human Services career cluster, Family and Community Services/Mental Health Services and Early Childhood Development and Services pathways. A student can participate in Introduction to Human Services prior to participation in this course. Lifespan Connections prepares a student to participate in additional pathway courses in the family and community services/mental health services, or early childhood development and services pathways.

Course Standards

LC 1: Analyze functions and dynamics of interpersonal relationships.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	LC 1.1 Demonstrate communication skills that contribute to positive family, work, romantic, and acquaintance relationships.
One Recall	LC 1.2 Identify effective conflict prevention and management strategies.
Four Extended Thinking	LC 1.3 Connect the relationship of diverse individual and family perspectives, needs and characteristics to their impact on society.
Three Strategic Thinking	LC 1.4 Investigate the influence that internal and external conditions have on interpersonal relationships.

LC 2: Analyze factors that contribute to healthy relationships across the lifespan.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	LC 2.1 Connect interpersonal relationship strategies, techniques, and community resources to meet the diverse needs of children and adolescents.
Three Strategic Thinking	LC 2.2. Connect interpersonal relationship strategies, techniques, and community resources to meet the diverse needs of adults.
Three Strategic Thinking	LC 2.3 Connect interpersonal relationship strategies, techniques, and community resources to meet the diverse needs of the elderly.

LC 3: Analyze characteristics of a healthy lifestyle.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	LC 3.1 Discuss the effect of lifestyle choices.
Three Strategic Thinking	LC 3.2 Contrast healthy and unhealthy relationships.

LC 4: Evaluate the impact of relationships between family and workplace.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	LC 4.1 Determine the transferable skills necessary to function effectively in family, community, and wage-earner roles.
Two Skill/Concept	LC 4.2 Investigate stress management techniques for life and work balance.



Nutrition and Wellness

Career Cluster	Human Services
Course Code	19253
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Foundation course – Introduction to Human Services – Relationships Across the Lifespan – Nutrition and Wellness – additional pathway course – capstone experience
Student Organization	FCCLA, Skills USA
Coordinating Work-Based Learning	Work Based Learning: Workplace Tours, Service Learning
Industry Certifications	First Aid, CPR, National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Hospitality & Tourism Cluster Endorsement; Restaurant and Food Service Management Pathway Endorsement; Human Services Cluster Endorsement; FACS Endorsement; FACS Education
Resources	Academy of Dietetic and Nutrition, USDA, MyPlate (current government guidelines) National Wellness Institute, FCCLA Student Body Program, FCCLA Nutrition and Wellness STAR Event.

Course Description

Nutrition and Wellness educates students to make healthy lifestyle choices for personal, family, and career success across the lifespan. Topics include the impact of technology on nutrition, food choices, wellness and stress management, meal planning and preparation, dietary guidelines, and food safety and sanitation practices.

Program of Study Application

Nutrition and Wellness is a pathway course in the Human Services career cluster, Personal Care Services, Family and Community Services/Mental Health Services and Early Childhood Development and Services pathways. A student would participate in Introduction to Human Services prior to participation in this course. Nutrition and Wellness prepares a student to participate in additional pathway courses in the personal care services, family and community services/mental health services, or early childhood development and services pathways.

Course Standards

NW 1: Evaluate factors that influence nutrition.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	NW 1.1 Investigate the impact of technology and media on food and health practices.
Four Extended Thinking	NW 1.2 Analyze the effects of psychological, cultural, economic and social influences on food choices and other nutrition practices.
Two Skill/Concept	NW 1.3 Determine the effects of nutrition on health, appearance, and a healthy lifestyle.

NW 2: Evaluate the needs of individuals and families in relation to health, nutrition, and wellness across the lifespan.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	NW 2.1 Analyze and investigate the impact of wellness dimensions on a healthy lifestyle.
Four Extended Thinking	NW 2.2 Apply current dietary guidelines to meet nutrition and wellness needs.
One Recall	NW 2.3 Describe the effect of physical activity on health, appearance, and a healthy lifestyle.
Four Extended Thinking	NW 2.4 Analyze the effects of food and diet fads, food addictions, and eating disorders on wellness.

NW 3: Evaluate factors that affect food safety.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	NW 3.1 Apply practices to promote safe food handling.
One Recall	NW 3.2 Describe food borne illness that cause health issues.

NW 4: Demonstrate ability to acquire, handle, and utilize foods to meet nutrition and wellness needs of individuals and families across the life span.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	NW 4.1 Plan and prepare a meal incorporating nutritional guidelines.
Two Skill/Concept	NW 4.2 Demonstrate ability to select, store, prepare, and serve nutritious and aesthetically pleasing foods.
Two Skill/Concept	NW 4.3 Use kitchen tools and equipment in a proper and safe manner.



Nutritional Sciences

Career Cluster	Human Services
Course Code	16054
Prerequisite(s)	None
Credit	0.5 credit
Program of Study and Sequence	Foundation course – Introduction to Human Services – Relationships Across the Lifespan – Nutritional Sciences – additional pathway course – capstone experience
Student Organization	FCCLA, Skills USA
Coordinating Work-Based Learning	Certifications: First Aid, Cardio-Pulmonary Resuscitation (CPR), ServSafe Work-Based Learning: Workplace Tours, Job Shadowing, Service Learning
Industry Certifications	(optional) ServSafe, Rserving, Manage First- Nutrition, OSHA 10 Hour Safety Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Hospitality & Tourism Cluster Endorsement; Restaurant and Food Service Management Pathway Endorsement; FACS Endorsement; FACS Education
Resources	Postsecondary schools, Rserving, ServSafe, CDC, FDA, FCCLA Nutrition and Wellness STAR Event, FCCLA Sports Nutrition STAR Event, MyFitnessPal, Cronometer

Course Description

Nutritional Sciences provides an in-depth study of nutrition and how it affects the human body. Topics include extensive study of major nutrients, nutrition/food choice influences, technological and scientific influences, special diets, and career exploration in this field. Attention will be given to nutrition, menu planning, industry-based food safety and sanitation. Laboratory experiences will be utilized to develop food handling and preparation skills. Nutritional Sciences is geared toward students interested in careers involving dietetics, education and health and wellness related fields.

Program of Study Application

Nutritional Sciences is a pathway course in the Human Services career cluster, Family and Community Services/Mental Health Services and Early Childhood Development and Services pathways. A student can participate in Introduction to Human Services prior to participation in this course. Nutritional Sciences prepares a student to participate in additional pathway courses in the family and community services/mental health services, or early childhood development and services pathways.

Course Standards

NS 1: Analyze career paths within food science, food technology, dietetics, and nutrition industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	NS 1.1 Classify skills and educational requirements for employment in dietetics and nutrition fields.
Three Strategic Thinking	NS 1.2 Differentiate the impact of societal and industry trends on food science, dietetics, and nutrition careers.

NS 2: Evaluate nutrients, nutrition guidelines, food plans, and specialized dietary plans.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	NS 2.1 Analyze nutrient requirements across the lifespan addressing diverse food customs and practices.
Three Strategic Thinking	NS 2.2 Critique the impact of food choices and trends on health and wellness.
Two Skill/Concept	NS 2.3 Construct a modified diet based on nutritional needs and health conditions.

NS 3: Implement practices that promote industry-based safe food handling.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	NS 3.1 Demonstrate an ability to follow food service management safety and sanitation procedures.
Two Skill/Concept	NS 3.2 Implement industry standards for documenting, investigating, and reporting foodborne illnesses.

NS 4: Apply food science principles in a laboratory setting to maximize nutrient retention and meet specialized dietary requirements.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	NS 4.1 Analyze recipe/formula proportions and modifications for specialized diets.
Four Extended Thinking	NS 4.2 Apply nutrition knowledge to maximize nutrient retention in prepared foods.

Foundational CTE Courses

Career Exploration (22151) Employability (22152) Entrepreneurship (12053) Workplace Technology Skills (10004) Leadership & Service (22101)

Cluster Courses

MS Family & Consumer Sciences (19000) Introduction to Hospitality & Tourism (16001^)
Hospitality & Lodging Management (16051^)

Pathway Courses

<i>Restaurant & Food/Beverage Services</i>	<i>Nutrition</i>	<i>Travel, Tourism, & Lodging</i>
Introduction to Food Concepts (16052)	Food Science and Technology (19254)	Event Management (16152)
Nutrition & Wellness (19253)	Nutrition & Wellness (19253)	Hospitality & Lodging Services (16101)
Restaurant Management & Culinary Arts I (16053)	Nutritional Sciences (16054)	Hospitality and Tourism Management (16151)
Restaurant Management & Culinary Arts II (16055)		
Restaurant Management & Culinary Arts III (16056)		

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Hospitality & Tourism Career Cluster.

Academic CTE Courses

Economics (04201^)
Sociology (04258^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^)
Youth Apprenticeship (80020) Service Learning Experience (22104) Youth Internships (80018^)

Introduction to Food Concepts

Career Cluster	Hospitality and Tourism
Course Code	16052
Prerequisite(s)	N/A
Credit	0.5
Program of Study and Sequence	Foundational Course – Introduction to Food Concepts – Pathway Course – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA)
Coordinating Work-Based Learning	Workplace Tours, Mentoring
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Pathway Endorsement
Resources	Guide to Good Food; USDA MyPlate; www.igrow.org (SDSU Extension: 4-H Foods and Nutrition Resources)

Course Description

Introduction to Food Concepts will explore safe and effective basic food preparation. Students apply food selection and preparation guidelines.

Program of Study Application

Introduction to Food Concepts is a cluster course in the Hospitality and Tourism career cluster; Restaurant and Food/Beverage Service pathway.

Course Standards

IFP 1: Students will demonstrate food safety and sanitation procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IFP 1.1 Apply established safety rules and guidelines to maintain a safe working environment.
One Recall	IFP 1.2 Identify proper first-aid procedures for cuts, burns, and electrical shock.
One Recall	IFP 1.3 Identify health and hygiene best practices for food handling, e.g. handwashing; grooming and hygiene.
One Recall	IFP 1.4 Apply sanitation rules and regulations.
One Recall	IFP 1.5 Identify methods that prevent food-borne illnesses and contamination.

IFP 2: Students will apply skills related to kitchen equipment and management.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IFP 2.1 Identify types, use and care of kitchen equipment.
One Recall	IFP 2.2 Identify food measurement terminology and abbreviations.
Two Skill/Concept	IFP 2.3 Demonstrate proper measuring techniques.
Two Skill/Concept	IFP 2.4 Apply mathematic concept through equivalents, recipe adjustments and conversions.
One Recall	IFP 2.5 Identify basic food preparation terminology.
Two Skill/Concept	IFP 2.6 Practice management skills, e.g. shopping lists, table settings, time management, budgeting, nutritional needs.

IFP 3: Students will apply food selection and preparation guidelines while preparing foods.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IFP 3.1 Identify components of selecting food products.
Two Skill/Concept	IFP 3.2 Demonstrate preparation methods for basic food products, e.g. quick breads, yeast breads, eggs, fruit smoothies, soups, salads, open-faced sandwiches.

IFP 4: Students will identify career pathways within the food service industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IFP 4.1 Recognize employment opportunities within the food service industry.
One Recall	IFP 4.2 Explore education and training opportunities in the food service industry.



Event Management

Career Cluster	Hospitality and Tourism
Course Code	16152
Prerequisite(s)	Recommended: Introduction to Hospitality and Tourism
Credit	0.5
Program of Study and Sequence	Foundation Course – Cluster Course - Event Management – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), SkillsUSA, Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Job Shadowing, Student Internships, mentoring, interviewing professionals, workplace tours, guest speakers, entrepreneurship
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS), FACS Education, Hospitality and Tourism Cluster Endorsement
Resources	Career Investigation STAR Event, Event Management STAR Event, and Hospitality, Tourism, and Recreation STAR Event, SkillsUSA Entrepreneurship Competition, SkillsUSA Customer Service Competition

Course Description

In Event Management, students organize, plan, implement, and evaluate events while developing event management skills. Events could include sporting, school, community, fundraising, entertainment, and related events. Students explore careers related to the event management industry.

Program of Study Application

Event Management is a pathway course in the Hospitality and Tourism career cluster; Travel, Tourism, and Lodging pathway.

Course Standards

EM 1: Students will analyze career opportunities in event planning and management.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	EM 1.1 Identify and compare career pathways in event planning and management.
One Recall	EM 1.3 Explore and demonstrate knowledge of employment opportunities, workplace environments, and career growth potential.
Three Strategic Thinking	EM 1.2 Assess personal and technical characteristics necessary for career success in event planning.

EM 2: Students will explore professional roles and responsibilities of event planning.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EM 2.1 Compare and contrast different kinds of events.
Three Strategic Thinking	EM 2.2 Investigate components of the event planning process.
Two Skill/Concept	EM 2.3 Explore forms, records, and contracts related to event planning.
Two Skill/Concept	EM 2.4 Discuss legal, ethical, safety and security responsibilities of event planners.

EM 3: Students will create an event proposal.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	EM 3.1 Identify the purpose of the event.
One Recall	EM 3.2 Identify client needs, wants, and expectations.
Three Strategic Thinking	EM 3.3 Create a budget based upon client input.
Three Strategic Thinking	EM 3.4 Determine event logistics.
Four Extended Thinking	EM 3.5 Present proposal for client feedback.

EM 4: Students will implement planned event.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EM 4.1 Utilize professional skills and attributes in event implementation.
Four Extended Thinking	EM 4.2 Demonstrate teamwork, problem-solving, and decision making skills in implementing planned event.
Four Extended Thinking	EM 4.3 Demonstrate conflict resolution strategies in managing events.

EM 5: Students will evaluate completed event.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EM 5.1 Develop a process for event evaluation.
Four Extended Thinking	EM 5.2 Critique event implementation.



Food Science and Technology

Career Cluster	Hospitality and Tourism
Course Code	19254
Prerequisite(s)	N/A
Credit	0.5
Program of Study and Sequence	Foundation Course - Cluster Course – Food Science and Technology – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA)
Coordinating Work-Based Learning	Workplace Tours; Mentoring
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Pathway Endorsement
Resources	FCCLA Food Innovations STAR Event

Course Description

Food Science and Technology offers opportunities to study the composition, structure, and properties of foods. Students examine changes that occur during the processing, storage, preparation, and consumption of food. Students explore effects of various materials, microorganisms, and processes on food products through laboratory experiments.

Program of Study Application

Food Science and Technology is a pathway course in the Hospitality and Tourism career cluster; Restaurant and Food/Beverage Services pathway.

Course Standards

FT 1: Students will integrate knowledge, skills, and practices required for careers in food science, food processing and food production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 1.1 Determine the contributions of food science to society.
Two Skill/Concept	FT 1.2 Summarize food science in relation to social trends and technological advances.
Two Skill/Concept	FT 1.3 Explain contributions of food science to changing food quality and availability.
Two Skill/Concept	FT 1.4 Investigate careers in food science, food processing, and food production industries.

FT 2: Students will explore scientific practices as they relate to the food industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT. 2.1 Demonstrate safe laboratory practices.
Three Strategic Thinking	FT 2.2 Apply skills needed for valid and reliable scientific experiments.

FT 3: Students will demonstrate food safety and sanitation procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 3.1 Practice procedures that minimize the risks of food borne illness.
Three Strategic Thinking	FT 3.2 Differentiate how microorganisms act in food and their effect on food products.
Two Skill/Concept	FT 3.3 Classify sources of contamination: chemical, physical, and biological.

FT 4: Students will investigate physical and chemical changes of food composition.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 4.1 Differentiate roles of the three phases of water in food preparation, food processing and food safety.
Three Strategic Thinking	FT 4.2 Investigate changes of macro nutrients in food processing and preparation.
Three Strategic Thinking	FT 4.3 Investigate changes of micro nutrients in food processing and preparation.

FT 5: Students will use the role of sensory evaluation in the food industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	FT 5.1 Differentiate sensory characteristics that affect food preferences.
Two Skill/Concept	FT 5.2 Implement procedures for evaluation of sensory characteristics.

FT 6: Students will investigate technological advances in food science, food processing, and food production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	FT 6.1 Distinguish scientific advances that have changed the food supply and preparation.
Three Strategic Thinking	FT 6.2 Investigate use of technology in new food product development.



Hospitality and Tourism Management

Career Cluster	Hospitality and Tourism
Course Code	16151
Prerequisite(s)	N/A
Credit	0.5
Program of Study and Sequence	Foundation Course – Cluster Course – Hospitality and Tourism Management – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), Future Business Leaders of America (FBLA), SkillsUSA
Coordinating Work-Based Learning	Job shadowing, mentoring, interviewing professionals, workplace tours, guest speakers, or entrepreneurship
Industry Certifications	Occupational Safety and Health Administration (OSHA), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS), FACS Education, Hospitality and Tourism Cluster Endorsement
Resources	FCCLA Hospitality & Tourism STAR Event, Career Investigation STAR Event, Entrepreneurship STAR Event, SkillsUSA Entrepreneurship Competition, SkillsUSA Customer Service Competition, FBLA Emerging Business Issues Presentation Event

Course Description

Hospitality and Tourism Management assists students in charting a career path in one of the world's largest industries. The Hospitality and Tourism Management course provides students the opportunity to acquire marketable skills by examining the industry, exploring career opportunities, and developing the interpersonal and technical skills in the hospitality and tourism industry. Hospitality includes the study of a broad range of sectors and careers including lodging, restaurants, theme parks, airlines, cruise ships, tourist attractions, entertainment, and more. Students look at economic impact and ramifications of tourism development to the local, state, and national economy.

Program of Study Application

Hospitality and Tourism Management is a pathway course in the Hospitality and Tourism career cluster; Travel, Tourism, and Lodging pathway.

Course Standards

HTM 1: Students will investigate career opportunities within hospitality and tourism management.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	HTM 1.1 Identify current and emerging career opportunities in the hospitality and tourism industry.
Two Skill/Concept	HTM 1.2 Examine career progression and promotion procedures.
Two Skill/Concept	HTM 1.3 Compare and contrast management styles.
Three Strategic Thinking	HTM 1.4 Discuss legal and ethical aspects of careers in the hospitality and tourism industry.
Two Skill/Concept	HTM 1.5 Students will examine professional responsibilities of managers.

HTM 2: Students will explore guest services and amenity options.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HTM 2.1 Differentiate among the types of lodging accommodations and guest amenities.

HTM 3: Students will analyze management of guest experiences.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HTM 3.1 Analyze qualities and characteristics of effective service professionals.
Two Skill/Concept	HTM 3.2 Demonstrate ways to manage and enhance guest experiences.
Three Strategic Thinking	HTM 3.3 Compare and contrast company cultures and strategies for exceptional guest service.

HTM 4: Students will evaluate safety, security and environmental issues related to the recreation, travel and tourism industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HTM 4.1 Explore geographic regions, focusing on factors that create desirable travel destinations.
Two Skill/Concept	HTM 4.2 Examine the role of Occupational Safety and Health Administration (OSHA) regulations and standards.
Two Skill/Concept	HTM 4.3 Identify the role of hospitality and tourism regulations and procedures.
Three Strategic Thinking	HTM 4.4 Evaluate safety plans and policies as they relate to hospitality and tourism.

HTM 5: Students will describe organizational structure of hospitality and lodging systems.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	HTM 5.1 Summarize the development and structure of hospitality and lodging businesses.

Three Strategic Thinking	HLM 5.2 Analyze how quality of service is influenced by lodging operations and organizational structure.
Two Skill/Concept	HLM 5.3 Compare and contrast independently-owned, chain-affiliated, franchised and corporate management structures.
Two Skill/Concept	HLM 5.4 Summarize leadership and teamwork qualities necessary to organizational success.
Two Skill/Concept	HTM 5.5 Investigate lodging operations of front office and housekeeping.
Three Strategic Thinking	HTM 5.6 Research how technology impacts lodging operations.

HTM 6: Students will evaluate travel motivators and consumer needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	HTM 6.1 Identify segments of tourism.
Three Strategic Thinking	HTM 6.2 Investigate trends and effects on recreation, travel and tourism practices.
Two Skill/Concept	HTM 6.3 Explore cost of recreation and travel on consumer decisions.
Three Strategic Thinking	HTM 6.4 Evaluate effects of technology on consumer behavior and attitudes related to recreation, travel, and tourism.

HTM 7: Students will examine managerial responsibilities related to operational finances.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	HTM 7.1 Research cost, pricing and market demands to promote profitability.
Three Strategic Thinking	HTM 7.2 Examine budgeting skills necessary in maintaining fiscal responsibility.
Three Strategic Thinking	HTM 7.3 Explore tourism development in terms of increased sustainability, profitability and benefits to the surrounding community.



Introduction to Hospitality and Tourism

Career Cluster	Hospitality and Tourism
Course Code	16001
Prerequisite(s)	N/A
Credit	0.5
Program of Study and Sequence	Foundation Course – Introduction to Hospitality and Tourism – Pathway Course – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), SkillsUSA
Coordinating Work-Based Learning	Youth Internships, Job Shadowing, Mentoring, Entrepreneurship, Service Learning, Workplace Tours, Apprenticeships
Industry Certifications	Occupational Safety Health Administration (OSHA), National Career Readiness Certification (NCRC)
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS) Endorsement, FACS Education, Hospitality & Tourism Cluster Endorsement
Resources	SDMyLife, www.chooserestaurants.org , FCCLA Career Investigation STAR Event, onetonline.org, FCCLA Hospitality, Tourism, and Recreation STAR Event

Course Description

Introduction to Hospitality and Tourism focuses on pathways and careers in the Hospitality and Tourism cluster. Students identify and compare their personal attributes with careers in this cluster. Students explore the professional behaviors, skills, and abilities necessary for success in the hospitality and tourism industry.

Program of Study Application

Introduction to Hospitality and Tourism is a cluster course in the Hospitality and Tourism career cluster. A student would participate in a foundation course prior to participation in this course. Introduction to Hospitality and Tourism prepares a student to participate in pathway courses in any of the Hospitality and Tourism pathways: restaurant and food/beverage services; nutrition; travel, tourism, lodging.

Course Standards

IHT 1: Students will identify career pathways within the hospitality and tourism industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IHT 1.1 Describe workplace skills necessary to be successful in the hospitality and tourism industry.
Three Strategic Thinking	IHT 1.2 Compare and contrast career pathways in the hospitality and tourism industry.

IHT 2: Students will examine safety, security and environmental issues related to the hospitality and tourism industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IHT 2.1 Identify industry standards which comply with safety policies and procedures.

IHT 3: Students will summarize concepts of customer service.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IHT 3.1 Evaluate the impact customer relations has on success in the hospitality and tourism industry.
Two Skill/Concept	IHT 3.2 Distinguish customer service processes to meet customer expectations.

IHT 4: Students will investigate ethical and legal responsibilities of the hospitality and tourism industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IHT 4.1 Investigate issues related to confidentiality and ethics in the hospitality and tourism industry.
Two Skill/Concept	IHT 4.2 Describe legal rights and responsibilities of hospitality and tourism employees and guests.

IHT 5: Students will demonstrate skills and practices required for careers in the hospitality and tourism industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IHT 5.1 Apply practices and skills involved in lodging occupations.
Two Skill/Concept	IHT 5.2 Apply practices and skills for recreation, travel and tourism services.
Two Skill/Concept	IHT 5.3 Apply practices and skills involved in the restaurant and food service industry.



Restaurant Management/Culinary Arts I

Career Cluster	Hospitality and Tourism
Course Code	16053
Prerequisite(s)	N/A
Credit	1.0
Program of Study and Sequence	Foundation Course – Cluster Course – Restaurant Management/Culinary Arts I – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), ProStart, SkillsUSA
Coordinating Work-Based Learning	Work Based Learning; Workplace Tours; Service Learning; Youth Internship; Mentoring
Industry Certifications	Occupational Safety and Health Administration (OSHA), ProStart, National Career Readiness Certificate (NCRC), ServSafe
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Cluster Endorsement; Restaurant and Food Service Management Pathway Endorsement
Resources	ServSafe; www.chooserestaurants.org ; Rserving

Course Description

Students in Restaurant Management/Culinary Arts I learn entry level culinary skills needed for success in the foodservice industry or continuing education. Students train in industry-specific skills that can be used in all areas of the foodservice industry.

Program of Study Application

Restaurant Management/Culinary Arts I is a pathway course in the Hospitality and Tourism career cluster; Restaurant and Food/Beverage Services Pathway.

Course Standards

1RMCA 1: Students will identify career paths and professional practices within the food production and food service industries.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	1RMCA 1.1 Identify employment opportunities and entrepreneurial endeavors.
Two Skill/Concept	1RMCA 1.2 Explain roles, duties and functions of individuals engaged in food production and service careers.
Three Strategic Thinking	1RMCA 1.3 Develop personal employment artifacts.
Two Skill/Concept	1RMCA 1.4 Develop professional habits required by the foodservice industry

1RMCA 2: Students will demonstrate food and workplace safety and sanitation procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	1RMCA 2.1 Apply sanitation procedures to ensure compliance with health codes.
Two Skill/Concept	1RMCA 2.2 Categorize potentially hazardous foods and food preparation practices.
Two Skill/Concept	1RMCA 2.3 Apply proper food handling techniques.
Two Skill/Concept	1RMCA – 2.4 Apply safety procedures to maintain a safe work environment.
Two Skill/Concept	1RMCA – 2.5 Identify and correct workplace hazards.

1RMCA 3: Students will demonstrate industry standards in selecting, using and maintaining food production and foodservice equipment.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	1RMCA 3.1 Identify types of equipment used in food production.
Two Skill/Concept	1RMCA 3.2 Maintain tools and equipment following safety procedures.
Two Skill/Concept	1RMCA 3.3 Demonstrate professional skills in safe handling of knives, tools, and equipment.

1RMCA 4: Students will practice menu planning principles and techniques based on standardized recipes to meet customer needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	1RMCA 4.1 Describe menu planning principles.
Two Skill/Concept	1RMCA 4.2 Complete requisitions for food, equipment and supplies to meet production requirements.

Three Strategic Thinking	1RMCA 4.3 Apply principles of measurement, portion control, conversions, food cost analysis and control, menu terminology, and menu pricing to menu planning.
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1RMCA 5: Students will demonstrate professional food preparation methods and techniques for menu categories to produce food products that meet customer needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	1RMCA 5.1 Apply <i>mise en place</i> (the concept of everything in its place) through practice.
Two Skill/Concept	1RMCA 5.2 Execute knife cuts.
Two Skill/Concept	1RMCA 5.3 Demonstrate professional skills for a variety of cooking methods using professional equipment and current technologies.
Two Skill/Concept	1RMCA 5.4 Apply fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods.
Two Skill/Concept	1RMCA 5.5 Prepare a variety of food products using professional techniques.

1RMCA 6: Students will describe foodservice management and leadership functions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	1RMCA 6.1 Explore work place procedures.
Two Skill/Concept	1RMCA 6.2 Introduce human resource policies, rules, regulations, and laws.

1RMCA 7: Students will demonstrate internal and external customer service.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	1RMCA 7.1 Identify components of customer service.
Two Skill/Concept	1RMCA 7.2 Differentiate types of service used in the foodservice industry.
One Recall	1RMCA 7.3 Identify quality service as a strategic component of performance.
Two Skill/Concept	1RMCA 7.4 Demonstrate respect for all customers including those with special needs.



Restaurant Management/Culinary Arts II

Career Cluster	Hospitality and Tourism
Course Code	16055
Prerequisite(s)	Restaurant Management/Culinary Arts I (RMCA I)
Credit	1.0
Program of Study and Sequence	Foundation Course – Cluster Course – Restaurant Management/Culinary Arts II – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), ProStart, SkillsUSA
Coordinating Work-Based Learning	Work Based Learning; Workplace Tours; Service Learning; Youth Internship; Mentoring
Industry Certifications	Occupational Safety and Health Administration (OSHA), ProStart, National Career Readiness Certificate (NCRC), ServSafe
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Pathway Endorsement; Restaurant and Food Service Management Pathway Endorsement
Resources	Rserving; ServSafe; www.chooseresaurants.org

Course Description

Students in Restaurant Management/Culinary Arts II expand upon entry level culinary skills needed for success in the foodservice industry or continuing education. Students train in industry-specific skills that can be used in all areas of the foodservice industry.

Program of Study Application

Restaurant Management/Culinary Arts II is a pathway course in the Hospitality and Tourism career cluster; Restaurant and Food/Beverage Services Pathway.

Course Standards

2RMCA 1: Students will exhibit professional practices to prepare for careers in the food service industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	2RMCA 1.1 Create/update employment artifacts.
Three Strategic Thinking	2RMCA 1.2 Align employability skills to workplace professionalism.

2RMCA 2: Students will demonstrate food and workplace safety and sanitation procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	2RMCA 2.1 Apply sanitation procedures to comply with health codes.
Four Extended Thinking	RMCA 2.2 Apply proper food handling techniques.
Four Extended Thinking	2RMCA 2.3 Apply safety procedures and correct workplace hazards to maintain a safe work environment.

2RMCA 3: Students will demonstrate menu planning principles and techniques based on standardized recipes to meet customer needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	2RMCA 3.1 Apply menu planning principles to develop and modify menus.
Two Skill/Concept	2RMCA 3.2 Complete requisitions for food, equipment and supplies to meet production requirements.
Three Strategic Thinking	2RMCA 3.3 Apply principles of measurement, portion control, conversions, food cost analysis and control, menu terminology, and menu pricing to menu planning.
Four Extended Thinking	2RMCA 3.4 Design a variety of menu layouts, themes, and design styles.
Two Skill/Concept	2RMCA 3.5 Explore nutritional needs and their significance to the foodservice industry.
Two Skill/Concept	2RMCA 3.6 Explore emerging trends in the foodservice industry.

2RMCA 4: Students will demonstrate professional food preparation methods and techniques for menu categories to produce food products that meet customer needs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	2RMCA 4.1 Apply <i>mise en place</i> (the concept of everything in its place) through practice.
Two Skill/Concept	2RMCA 4.2 Execute knife cuts.
Four Extended Thinking	2RMCA 4.3 Select appropriate cooking techniques.

Four Extended Thinking	2RMCA 4.4 Evaluate fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of foods.
Four Extended Thinking	2RMCA 4.5 Prepare food products using professional techniques.
Four Extended Thinking	2RMCA 4.6 Demonstrate professional plating, garnishing, and food presentation techniques.

2RMCA 5: Students will implement foodservice management skills, leadership functions, and marketing strategies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	2RMCA 5.1 Apply management principles of the foodservice industry.
Two Skill/Concept	2RMCA 5.2 Explore sustainability in the foodservice industry.
Three Strategic Thinking	2RMCA 5.3 Implement team building strategies.
Two Skill/Concept	2RMCA 5.4 Explore human resource policies, rules, regulations, and laws.
Two Skill/Concept	2RMCA 5.5 Utilize interpersonal skills to resolve conflicts.
Four Extended Thinking	2RMCA 5.6 Create a marketing plan.



Restaurant Management/Culinary Arts III

Career Cluster	Hospitality and Tourism
Course Code	16056
Prerequisite(s)	Restaurant Management/Culinary Arts I (RMCA I); Restaurant Management/Culinary Arts II (RMCA II)
Credit	1.0
Program of Study and Sequence	Foundation Course – Cluster Course – Restaurant Management/Culinary Arts III – Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), ProStart, SkillsUSA
Coordinating Work-Based Learning	Work-Based Learning; Youth Internship Mentorship
Industry Certifications	Occupational Safety and Health Administration (OSHA), ProStart, ServSafe
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Family and Consumer Sciences (FACS); FACS Education; Hospitality and Tourism Cluster Endorsement, Restaurants and Food Service Management Pathway Endorsement
Resources	ServSafe; BIG Idea; ProStart; SkillsUSA; FCCLA; Entrepreneurial Resources, American Culinary Federation (ACF)

Course Description

Restaurant Management/Culinary Arts III provides advanced culinary students with instruction in advanced techniques and processes. Students continue to develop skills from prerequisite courses. Projects are tailored to students' interests and industry needs.

Program of Study Application

Restaurant Management/Culinary Arts III is a pathway course in the Hospitality and Tourism career cluster; Restaurant and Food/Beverage Services Pathway.

Course Standards

3RMCA 1: Students will explore business opportunities in the food service industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	3RMCA 1.1 Research career and entrepreneurial opportunities in the foodservice industry.
Two Skill/Concept	3RMCA 1.2 Explore professional organizations in the foodservice industry.

3RMCA 2: Students will apply food safety principles to the foodservice industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	3RMCA 2.1 Apply Hazard Analysis Critical Control Points (HACCP) to flow of food.
Three Strategic Thinking	3RMCA 2.2 Research state and federal health laws related to foodservice industry.
Three Strategic Thinking	3RMCA 2.3 Research industry certifications

3RMCA 3: Students will research advanced techniques in food production.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	3RMCA 3.1 Investigate concepts of sustainability practices.
Three Strategic Thinking	3RMCA 3.2 Investigate emerging trends in foodservice industry.

3RMCA 4: Students will apply advanced techniques and knowledge to produce a culminating project.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	3RMCA 4.1 Create a plan for a project.
Four Extended Thinking	3RMCA 1.2 Demonstrate effective marketing strategies in foodservice industry.
Four Extended Thinking	3RMCA 4.2 Create a culminating product.
Four Extended Thinking	3RMCA 4.3 Develop a skills portfolio.

Foundational CTE Courses

Career Exploration (22151^) Employability (22152^) Entrepreneurship (12053^) Workplace Technology Skills (10004^) Leadership & Service(22101^)

Cluster Courses

Introduction to Information Technology (10003^) Computer Hardware & Software (10251) PLTW MS Computer Science (10604)
PLTW Computer Science Essentials (10013) Computer Science Essentials (10057) Computer Science Principles (10015)

Pathway Courses

<i>Networking Systems Pathway</i>	<i>Programming & Software Development Pathway</i>	<i>Web & Digital Communication Pathway</i>	<i>Information Support Services Pathway</i>
Cybersecurity (10108) Computer Programming I (10152^) Adv. Computer Programming (10153)	Web Development (10201^) Advanced Web Development (10202) Computer Programming (10152^) Adv. Computer Programming (10153) Cybersecurity (10108)	Web Development (10201^) Advanced Web Development (10202)	Network Technologies (10101)
	PLTW Computer Science:		
	PLTW Computer Science Principles (10015) PLTW Computer Science A (10157) PLTW Cybersecurity (10016)		

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Information Technology Career Cluster.

Academic CTE Courses

Physics (03151^) Pre-Calculus (02110^) Calculus (02121) Trigonometry (02103^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^) Youth Apprenticeship (80020) Service Learning (22104) Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)

Introduction to Information Technology

Career Cluster	Information Technology
Course Code	10003
Prerequisite(s)	Recommended that a student has taken from the Foundation Courses Computer Applications.
Credit	.5
Program of Study and Sequence	Intro to Information Technology is recommended as a prerequisite for two career pathways in the Information Technology: 1) Programming; 2) Networking and Hardware.
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Tours, Guest Speakers, Job Shadowing
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; K-12 Educational Technology; K-12 Classroom Technology
Resources	

Course Description:

Introduction to Information Technology prepares students with knowledge and background of technology careers, programming, and hardware. This course explores new and emerging technologies for both professional and personal use.

Program of Study Application

Introduction to Information Technology is recommended as a prerequisite for two pathways: Programming and Networking & Hardware.

Course Standards

INDICATOR # IT 1. Understand the need and impact of technology.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 1.1 Define the relationship between electronic devices and computers.	
Level 1: Recall	IT 1.2 Describe the functional areas in which computers assist people.	
Level 1: Recall	IT 1.3 Describe how technology is impacting community.	
Level 1: Recall	IT 1.4 List physical and mental health dangers associated with computer use.	

INDICATOR #IT 2. Understand computer hardware required to meet specific needs.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 2.1 Understand how computer information is represented.	
Level 1: Recall	IT 2.2 Identify hardware components and their relationship to computer usage.	
Level 2: Skill/Concept	IT 2.3 Understand different types of memory and storage.	
Level 1: Recall	IT 2.4 Identify input and output devices to meet the needs of users.	
Level 2: Skill/Concept	IT 2.5 Understand the decision-making process involved in purchasing computer systems.	

INDICATOR #IT 3. Understand software solutions for personal and professional use.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	IT 3.1 Explain how software is created, distributed, installed, and maintained.	
Level 1: Recall	IT 3.2 Describe the functions of system software and operating systems.	
Level 2: Skill/Concept	IT 3.3 Describe different types and purposes of productivity software.	

INDICATOR #IT 4. Understand technology used for the Internet.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 4.1 Describe how the Internet developed.	
Level 1: Recall	IT 4.2 Explain how hardware, protocols, and software work together to create the Internet.	
Level 2: Skill/Concept	IT 4.3 Explain the underlying structures and technologies used to support the Internet.	

INDICATOR #IT 5. Understand computer network and telecommunications technologies.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 1: Recall	IT 5.1 Understand the fundamentals of data communications.	
Level 1: Recall	IT 5.2 List the types of media, devices, and software needed for networking services.	
Level 1: Recall	IT 5.3 List and describe the popular forms of wireless technologies.	

INDICATOR #IT 6. Understand the needs and uses for digital media.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 6.1 Understand the uses of digital media.	
Level 2: Skill/Concept	IT 6.2 Discuss how interactive media is used to educate and entertain.	

INDICATOR #IT 7. Understand computer crime and information security.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 7.1 Describe methods of keeping electronic devices secure.	
Level 2: Skill/Concept	IT 7.2 Discuss the threats and defenses for networks.	
Level 3: Strategic Thinking	IT 7.3 Describe the threats posed by hackers, software, scams and the methods of defending against them.	

INDICATOR #IT 8. Understand technology ethics in a global society.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	IT 8.1 Describe the negative and positive impacts of social media.	
Level 2: Skill/Concept	IT 8.2 Explain the ways in which technology is used to invade personal privacy.	
Level 1: Recall	IT 8.3 Identify ethical issues related to digital technology.	

INDICATOR #IT 9. Explore careers in information technology.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IT 9.1 Identify skills, interests, and abilities related to information technology.	
Level 2: Skill/Concept	IT 9.2 Compare personal interest survey results with information technology occupations.	
Level 3: Strategic Thinking	IT 9.3 Research labor market information for information technology.	
Level 2: Skill/Concept	IT 9.4 Demonstrate necessary job skills needed for Information and Technology industries.	

INDICATOR #IT 10. Demonstrate knowledge of the software development process.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 4: Extended Thinking	IT 10.1 Apply tools for developing software applications.	
Level 3: Strategic Thinking	IT 10.2 Demonstrate knowledge of programming structures.	

Advanced Computer Programming

Career Cluster	Information Technology
Course Code	10152
Prerequisite(s)	Computer Applications, Introduction to Information Technology Careers (recommended), Computer Hardware & Software (recommended)
Credit	.5-1
Program of Study and Sequence	Computer Programming is in the Programming Pathway and the Networking & Hardware Pathway
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Tours, Informational Interviews, Internships
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Programming & Software Development Pathway Endorsement; Engineering & Robotics Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology
Resources	

Course Description:

Advanced Computer Programming reviews and builds on the concepts introduced in Computer Programming I and introduces students to more complex data structures. Topics include sequential files, arrays, and classes.

Program of Study Application

Computer Programming is in the Programming Pathway and the Networking & Hardware Pathway.

Course Standards

INDICATOR # ACP 1. Utilize problem solving skills in a programming environment.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 3: Strategic Thinking	ACP 1.1 Demonstrate the ability to compile, apply problem solving to debugging and executing programs.	
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INDICATOR # ACP 2 Employ advanced conventions for creation and design of a software program.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	ACP 1.1 Demonstrate the ability to compile, apply problem solving to debugging and executing programs.	
Level 3: Strategic Thinking	ACP 2.2 Examine software development processes.	
Level 2: Skill/concept	ACP 2.3 Implement the syntactical components of a program.	

INDICATOR # ACP 3 Properly use language-fundamental commands and operations independently.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	ACP 3.1 Demonstrate the ability to use basic elements of a specific language.	
Level 3: Strategic Thinking	ACP 3.2 Employ basic arithmetic expressions in programs.	
Level 3: Strategic Thinking	ACP 3.3 Demonstrate the ability to use data types in programs.	
Level 3: Strategic Thinking	ACP 3.4 Incorporate functions/methods.	

INDICATOR # ACP 4. Apply control structures.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	ACP 4.1 Demonstrate the ability to use relational and logical operators in programs.	
Level 4: Extended Thinking	ACP 4.2 Investigate conditional statements.	
Level 4: Extended Thinking	ACP 4.3 Implement loops in programs.	

INDICATOR # ACP 5. Integrate arrays.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ACP 5.1 Demonstrate the ability to use arrays in programs.	
Level 3: Strategic Thinking	ACP 5.2 Demonstrate the ability to use strings in programs.	

INDICATOR # ACP 6. Implement object-oriented programming techniques.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	ACP 6.1 Demonstrate the ability to use existing classes.	
Level 4: Extended Thinking	ACP 6.2 Demonstrate the ability to create user-defined classes.	
Level 4: Extended Thinking	ACP 6.3 Demonstrate proper design principles with classes.	

Advanced Web Development

Career Cluster	Information Technology
Course Code	10201
Prerequisite(s)	Computer Applications Introduction to Information Technology (recommended) Computer Information Technology (recommended) Web Development
Credit	.5-1
Program of Study and Sequence	Advanced Web Development is in the Programming Pathway and the Web & Digital Communication Pathway
Student Organization	SkillsUSA, Future Business Leaders of America, CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Informational Interviews, Tours
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Web & Digital Communications Pathway Endorsement; Arts, AV Technology & Communications Cluster Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Advanced Web Development is a course designed to guide students in a project-based environment implementing web development techniques. Through the use of hypertext markup language (HTML5) coding, Cascading Style Sheets (CSS), and JavaScript students will plan, design, develop, deploy, and maintain website projects. Students will learn fundamentals for a career in web development as they complete projects and create their own website. Advanced Web Development reviews and builds on the concepts introduced in Web Development including live production and scripting.

Program of Study Application: Advanced Web Development is in the Programming Pathway and the Web & Digital Communication Pathway

Course Standards

INDICATOR # AWD 1. Demonstrate creation of a website for a real-world application.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AWD 1.1 Create a website.	
Level 3: Strategic Thinking	AWD 1.2 Develop appropriate file structure and naming.	
Level 3: Strategic Thinking	AWD 1.3 Create website with appropriate HTML structure and standards that can be validated using World Wide Web Consortium validator (W3C).	
Level 3: Strategic Thinking	AWD 1.4 Demonstrate the use of elements and attributes.	
Level 3: Strategic Thinking	AWD 1.5 Incorporate meta tags for page documentation and search engine optimization (SEO).	
Level 4: Extended Thinking	AWD 1.6 Implement advanced elements to create a website.	

Indicator # AWD 2 Format website using Cascading Style Sheets (CSS).		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AWD 2.1 Apply essential aspects of the CSS.	

Level 3: Strategic Thinking	AWD 2.2 Apply CSS to a website.	
Level 4: Extended Thinking	AWD 2.3 Use selectors in a CSS.	
Level 4: Extended Thinking	AWD 2.4 Format page layout with advanced CSS.	

INDICATOR # AWD 3. Plan, design, implement, and maintain website(s).		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AWD 3.1 Analyze project requirements.	
Level 3: Strategic Thinking	AWD 3.2 Develop site design and page layout utilizing best practices.	
Level 4: Extended Thinking	AWD 3.3 Create content for website.	
Level 4: Extended Thinking	AWD 3.4 Upload and maintain a site.	

INDICATOR # AWD 4. Explore advanced web concepts.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AWD 4.1 Demonstrate the use of scripting and other interactive tools.	
Level 2: Skill/concept	AWD 4.2 Explore other web technologies.	

Computer Hardware & Software

Career Cluster	Information Technology
Course Code	10251
Prerequisite(s)	Introduction to Information Technology Careers (Recommended), Computer Applications (Recommended)
Credit	.5-1
Program of Study and Sequence	Computer Hardware & Software is recommended as a prerequisite for two pathways: Programming and Networking & Hardware.
Student Organization	Skills USA, Future Business Leaders of America, CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Guest Speakers, Tours, Personal Portfolios
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; Computer Repair & Maintenance Endorsement; K-12 Educational Technology; K-12 Classroom Technology
Resources	

Course Description: The Computer Hardware & Software course will prepare students to become more knowledgeable about the integral components of a computer system. Topics covered in the class include individual hardware components, upgrading and troubleshooting a computer, installing operating systems, and configuring basic network services.

Program of Study Application

Computer Hardware & Software is cluster course leading to the Programming and Networking & Hardware pathways.

Course Standards

INDICATOR # CIT 1. Apply knowledge of hardware design, operation and maintenance.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CIT 1.1 Understand how to design and assemble systems that use computer programs to interact with hardware.	
Level 3: Strategic Thinking	CIT 1.2 Install and configure essential computer hardware and software components .	

INDICATOR # CIT 2. Understand the relationships among computer hardware, networks, and operating systems.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CIT 2.1 Identify new IT technologies relevant to computer hardware.	
Level 2: Skill/Concept	CIT 2.2 Determine compatibility of hardware and software.	
Level 2: Skill/Concept	CIT 2.2 Understand the difference between an operating system, utility programs, and application software.	

INDICATOR # CIT 3. Understand basic networking services.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 2: Skill/Concept	CIT 3.1 Understand the basics of Internet protocol (IP) addressing.	
Level 4: Extended Thinking	CIT 3.2 Troubleshoot basic hardware and software problems.	

INDICATOR # CIT 4. Explore careers in information technology.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CIT 4.1 Identify skills, interests, and abilities related to information technology.	
Level 2: Skill/Concept	CIT 4.2 Identify personal interests using survey instruments with information technology occupations.	
Level 3: Strategic Thinking	CIT 4.3 Research labor market information for information technology.	
Level 2: Skill/Concept	CIT 4.4 Demonstrate necessary job skills needed for Information and Technology industries.	

Computer Programming I

Career Cluster	Information Technology
Course Code	10152
Prerequisite(s)	Computer Applications, Introduction to Information Technology Careers (recommended), Computer Hardware & Software (recommended)
Credit	.5-1
Program of Study and Sequence	Computer Programming or a dual credit equivalent is in the Programming Pathway and the Networking & Hardware Pathway
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Tours, Informational Interviews, Internships
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Programming & Software Development Pathway Endorsement; Engineering & Robotics Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology
Resources	

Course Description:

Computer Programming I introduces students to the fundamentals of computer programming. Students will learn to design, code, and test their own programs while applying mathematical concepts. Teachers introduce concepts and problem-solving skills through a programming language such as C, C++, C#, Java, Python, or Visual Basic. Computer Programming II reviews and builds on the concepts introduced in Computer Programming I and introduces students to more complex data structures. Topics include sequential files, arrays, and classes.

Program of Study Application

Computer Programming is required for the Programming Pathway and recommended for the Networking & Hardware Pathway.

Course Standards

INDICATOR # CP 1. Identify and use a programming environment.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CP 1.1 Demonstrate knowledge of software concepts.	
Level 2: Skill/Concept	CP 1.2 Demonstrate the ability to compile, debug, and execute programs.	

INDICATOR # CP 2. Employ standard conventions for creation and design of a software program.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CP 2.1 Demonstrate the ability to use a standard programming style.	
Level 2: Skill/Concept	CP 2.2 Recognize software development processes.	
Level 1: Recall	CP 2.3 Identify the syntactical components of a program.	

INDICATOR # CP 3. Properly use language-fundamental commands and operations.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CP 3.1 Demonstrate the ability to use basic elements of a specific language.	
Level 2: Skill/Concept	CP 3.2 Employ basic arithmetic expressions in programs.	

Level 3: Strategic Thinking	CP 3.3 Demonstrate the ability to use data types in programs.	
Level 2: Skill/Concept	CP 3.4 Incorporate functions/methods.	

INDICATOR # CP 4. Apply control structures.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CP 4.1 Demonstrate the ability to use relational and logical operators in programs.	
Level 3: Strategic Thinking	CP 4.2 Investigate conditional statements.	
Level 3: Strategic Thinking	CP 4.3 Implement loops in programs.	

INDICATOR # CP 5. Explore career opportunities in programming.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CP 5.1 Identify personal interests and abilities related to Computer Programming/Software Engineering careers.	
Level 3: Strategic Thinking	CP 5.2 Investigate career opportunities, trends, and requirements related to computer programming/software engineering careers.	
Level 2: Skill/Concept	CP 5.3 Demonstrate job skills for programming industries.	

Computer Science Essentials

Career Cluster	Information Technology
Course Code	10057
Prerequisite(s)	Introduction To Information Technology Careers (Recommended), Computer Applications (Recommended), Computer Hardware & Software (Recommended)
Credit	.5-1
Program of Study and Sequence	Computer Science Essentials is a Cluster course in the Information Technology cluster.
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Job Shadows, Internships, Volunteer
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Computer Science Essentials is a course designed to guide students in exploring a foundation of knowledge in computer science concepts. Topics covered in the class include computing systems, networks and the Internet, data and analysis, algorithms and programming, and the impacts of computing.

Program of Study Application

Computer Science Essentials is a Cluster course in the Information Technology cluster.

Course Standards

INDICATOR CSE #1 Explore computer systems and their functions.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 1.1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.	
Level 2: Skill/Concept	CSE 1.2 Compare levels of abstraction and interactions between application software, system software, and hardware layers.	
Level 1: Recall	CSE 1.3 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.	

INDICATOR CSE #2 Explore networks and the internet.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 2.1 Identify network components by describing the relationship between routers, switches, servers, topology, and addressing.	
Level 2: Skill/Concept	CSE 2.2 Give examples to illustrate how sensitive data can be affected by malware and other attacks.	
Level 2: Skill/Concept	CSE 2.3 Identify security measures to address various scenarios based on the CIA Triad (confidentiality, integrity, and availability).	

Level 2: Skill/Concept	CSE 2.4 Compare various security measures, considering tradeoffs between the usability and security of a computing system.	
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INDICATOR CSE #3 Explore data and analysis.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSE 3.1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.	
Level 2: Skill/Concept	CSE 3.2 Evaluate the tradeoffs in how data elements are organized and where data is stored.	

INDICATOR CSE #4 Identify and define algorithms and programming and how they are used in computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSE 4.1 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.	
Level 1: Recall	CSE 4.2 Investigate specific control structures and tradeoffs involving implementation, readability, and program performance.	
Level 3: Strategic Thinking	CSE 4.3 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.	
Level 2: Skill/Concept	CSE 4.4 Understand the purpose of gathering feedback when creating software.	

Level 1: Recall	CSE 4.5 Examine software licenses, including copyright, freeware, and open-source licensing.	
Level 3: Strategic Thinking	CSE 4.6 Evaluate computer programs for intended outcomes.	

INDICATOR CSE #5 Explore impacts of computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 5.1 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	
Level 2: Skill/Concept	CSE 5.2. Examine and identify bias and equity deficits in existing computer programs.	
Level 2: Skill/Concept	CSE 5.3 Identify and use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.	
Level 2: Skill/Concept	CSE 5.4 Explore privacy concerns and intellectual property laws related to computing.	
Level 1: Recall	CSE 5.5 Explore careers in computer science.	

Computer Science Essentials

Career Cluster	Information Technology
Course Code	10057
Prerequisite(s)	Introduction To Information Technology Careers (Recommended), Computer Applications (Recommended), Computer Hardware & Software (Recommended)
Credit	.5-1
Program of Study and Sequence	Computer Science Essentials is a Cluster course in the Information Technology cluster.
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Job Shadows, Internships, Volunteer
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Computer Science Essentials is a course designed to guide students in exploring a foundation of knowledge in computer science concepts. Topics covered in the class include computing systems, networks and the Internet, data and analysis, algorithms and programming, and the impacts of computing.

Program of Study Application

Computer Science Essentials is a Cluster course in the Information Technology cluster.

Course Standards

INDICATOR CSE #1 Explore computer systems and their functions.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 1.1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.	
Level 2: Skill/Concept	CSE 1.2 Compare levels of abstraction and interactions between application software, system software, and hardware layers.	
Level 1: Recall	CSE 1.3 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.	

INDICATOR CSE #2 Explore networks and the internet.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 2.1 Identify network components by describing the relationship between routers, switches, servers, topology, and addressing.	
Level 2: Skill/Concept	CSE 2.2 Give examples to illustrate how sensitive data can be affected by malware and other attacks.	
Level 2: Skill/Concept	CSE 2.3 Identify security measures to address various scenarios based on the CIA Triad (confidentiality, integrity, and availability).	

Level 2: Skill/Concept	CSE 2.4 Compare various security measures, considering tradeoffs between the usability and security of a computing system.	
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INDICATOR CSE #3 Explore data and analysis.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSE 3.1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.	
Level 2: Skill/Concept	CSE 3.2 Evaluate the tradeoffs in how data elements are organized and where data is stored.	

INDICATOR CSE #4 Identify and define algorithms and programming and how they are used in computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSE 4.1 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.	
Level 1: Recall	CSE 4.2 Investigate specific control structures and tradeoffs involving implementation, readability, and program performance.	
Level 3: Strategic Thinking	CSE 4.3 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.	
Level 2: Skill/Concept	CSE 4.4 Understand the purpose of gathering feedback when creating software.	

Level 1: Recall	CSE 4.5 Examine software licenses, including copyright, freeware, and open-source licensing.	
Level 3: Strategic Thinking	CSE 4.6 Evaluate computer programs for intended outcomes.	

INDICATOR CSE #5 Explore impacts of computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CSE 5.1 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	
Level 2: Skill/Concept	CSE 5.2. Examine and identify bias and equity deficits in existing computer programs.	
Level 2: Skill/Concept	CSE 5.3 Identify and use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.	
Level 2: Skill/Concept	CSE 5.4 Explore privacy concerns and intellectual property laws related to computing.	
Level 1: Recall	CSE 5.5 Explore careers in computer science.	

Computer Science Principles

Career Cluster	Information Technology
Course Code	10015
Prerequisite(s)	Introduction to Information Technology (recommended) Computer Science Essentials (recommended) Computer Hardware and Software (recommended)
Credit	.5-1
Program of Study and Sequence	Computer Science Principles is required for the Programming Pathway and recommended for the Networking & Hardware Pathway
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Guest Speakers, Tours, Job Shadowing, Personal Portfolio
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Computer Science Principles is a course designed to build upon and investigate knowledge in computer science concepts. Topics covered in the class include computing systems, networks and the Internet, data and analysis, algorithms and programming, and the impacts of computing.

Program of Study Application

Computer Science Principles is part of the Programming and Software Development Pathway

Course Standards

INDICATOR # CSP 1 Investigate computer systems and their functions.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSP 1.1 Compare and contrast how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.	
Level 3: Strategic Thinking	CSP 1.2 Use concepts to compare levels of abstraction and interactions between application software, system software, and hardware layers.	
Level 2: Skill/Concept	CSP 1.3 Develop and implement guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.	

INDICATOR # CSP 2 Investigate networks and the internet.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSP 2.1 Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).	
Level 2: Skill/Concept	CSP 2.2 Give examples to illustrate how sensitive data can be affected by malware and other attacks.	
Level 3: Strategic Thinking	CSP 2.3 Recommend security measures to address various scenarios based on the CIA Triad (confidentiality, integrity, and availability).	

Level 3: Strategic Thinking	CSP 2.4 Recommend various security measures, considering tradeoffs between the usability and security of a computing system.	
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INDICATOR # CSP 3 Investigate data and analysis.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CSP 3.1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.	
Level 3: Strategic Thinking	CSP 3.2 Evaluate the tradeoffs in how data elements are organized and where data is stored.	
Level 4: Extended Thinking	CSP 3.3 Select and use data collection tools and techniques to generate data sets that support a claim or communicate information.	

INDICATOR # CSP 4 Evaluate and construct algorithms and programming and how they are used in computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CSP 4.1 Use and evaluate algorithms in terms of their efficiency, correctness, and clarity.	
Level 2: Skill/Concept	CSP 4.2 Compare and contrast fundamental data structures and their uses.	

Level 3: Strategic Thinking	CSP 4.3 Recommend specific control structures and identify tradeoffs involving implementation, readability, and program performance.	
Level 3: Strategic Thinking	CSP 4.4 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.	
Level 4: Extended Thinking	CSP 4.5 Construct solutions to problems based on user feedback.	
Level 3: Strategic Thinking	CSP 4.6 Plan and develop programs for broad audiences using a software life cycle process.	
Level 2: Skill/Concept	CSP 4.7 Investigate and compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.	

INDICATOR # CSP 5 Investigate impacts of computing.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	CSP 5.1 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	
Level 3: Strategic Thinking	CSP 5.2 Identify and critique bias, equity, access, and influence in existing computer programs.	
Level 2: Skill/Concept	CSP 5.3 Identify and use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.	

Level 2: Skill/Concept	CSP 5.4 Debate laws and regulations that impact the development and use of software.	
Level 1: Recall	CSP 5.5 Explore careers in computer science.	

Cybersecurity

Career Cluster	Information Technology
Course Code	10108
Prerequisite(s)	Foundations of Technology (recommended) Introduction to Information Technology (recommended) Computer Science Essentials (recommended)
Credit	1
Program of Study and Sequence	Web Development is an option inside the Networking Systems Pathway.
Student Organization	SkillsUSA, Future Business Leaders of America, CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Informational Interviews, Internships, Tours
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Cyber security is an increasingly in-demand field in the Information Technology Cluster. In this course, student will look at the major ideas in the fields of cybersecurity or information assurance. The course design addresses the fundamental implications of technology, the history of securing information and the relationship to the evolution of technology, and the need to securely transmit and store information. This course will look at the ways computers, programs, networks, and people, are exploited by hackers, and what can be done to prevent or minimize the damage. Students will learn foundational cybersecurity topics including digital citizenship and cyber hygiene.

Course Standards

INDICATOR # CYB 1 Explore to Cybersecurity Concepts		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CYB 1.1 Define the importance of the cybersecurity industry.	
Level 1: Recall	CYB 1.2 Identify the role cybersecurity plays in personal usage	
Level 1: Recall	CYB 1.3 Identify the role cybersecurity plays in industry usage.	

INDICATOR # CYB 2 – Establishing Trust Cybersecurity		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CYB 2.1 Investigate the Confidentiality Integrity Availability (CIA) Triad – Security Models.	
Level 3: Strategic Thinking	CYB 2.2 Compare and contrast usability and security.	

INDICATOR # CYB 3 Explore Data Security and Security Systems		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CYB 3.1 Investigate encryption and encryption types.	

Level 3: Strategic Thinking	CYB 3.2 Investigate how businesses utilize security systems.	
Level 3: Strategic Thinking	CYB 3.3 Compare and contrast public versus private wifi.	
Level 3: Strategic Thinking	CYB 3.4 Explore processes that maintain integrity of data.	
Level 3: Strategic Thinking	CYB 3.5 Investigate data breaches and its impact on business and customers.	

INDICATOR # CYB 4 Examine risks, vulnerabilities, threats, and implications		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CYB 4.1 Differentiate between threats, vulnerabilities, and attacks.	
Level 2: Skill/Concept	CYB 4.2 Utilize adversarial thinking	
Level 2: Skill/Concept	CYB 4.3 Describe common security related software vulnerabilities	
Level 3: Strategic Thinking	CYB 4.4 Explore social engineering techniques related to cybersecurity	

INDICATOR # CYB 5 Examine legal and ethical issues related to cybersecurity		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	CYB 5.1 Compare and contrast ethical versus non-ethical hacking	

Level 2: Skill/Concept	CYB 5.2 Understand confidentiality and the role it plays in cybersecurity.	
Level 1: Recall	CYB 5.3 Discuss the impact of unethical and illegal hacking on quality of life.	
Level 4: Extended Thinking	CYB 5.4 Evaluate how the role of value and ethics impacts laws and policy decisions	
Level 4: Extended Thinking	CYB 5.4 Evaluate how the role of value and ethics impacts laws and policy decisions	

INDICATOR # CYB 6 Explore Careers in cybersecurity		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	CYB 6.1 Identify personal interests and abilities related to cybersecurity careers.	
Level 3: Strategic Thinking	CYB 6.2 Investigate career opportunities, trends, and requirements related to cybersecurity careers	
Level 1: Recall	CYB 6.3 Identify skills needed for cybersecurity careers.	

Network Technologies

Career Cluster	Information Technology
Course Code	10101
Prerequisite(s)	Introduction To Information Technology Careers (Recommended), Computer Applications (Recommended), Computer Hardware & Software (Recommended)
Credit	.5-1
Program of Study and Sequence	This course or a dual enrollment equivalent is required for the Networking & Hardware pathway and recommended for the Programming pathway
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Guest Speakers, Tours, Job Shadowing, Personal Portfolio
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Students in the Network Technologies course prepare for careers that involve network analysis, planning, and implementation, including design, installation, maintenance, and management of network systems. The successful establishment and maintenance of networking infrastructure is critical to the success of organizations.

Program of Study Application

Part of the Networking & Hardware pathway. Recommended courses include: Introduction To Information Technology Careers, Computer Applications, and Computer Hardware & Software.

Notes:

All Networking & Hardware standards integrate aspects of language arts and mathematics.

Course Standards

INDICATOR # NT 1. Demonstrate knowledge of designing and implementing a networking system.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	NT 1.1 Demonstrate knowledge of basic network communications.	
Level 1: Recall	NT 1.2 Demonstrate knowledge of basic network classifications and topologies.	
Level 1: Recall	NT 1.3 Demonstrate knowledge of common network hardware.	
Level 4: Extended Thinking	NT 1.4 Apply knowledge of local area network (LAN) physical media.	
Level 1: Recall	NT 1.5 Demonstrate knowledge of communication standards for networks.	
Level 4: Extended Thinking	NT 1.6 Plan, design, and create network architecture.	
Level 2: Skill/Concept	NT 1.7 Demonstrate knowledge of Network Operating Systems (NOS).	

INDICATOR # NT 2. Perform network operating system installation and configuration.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	NT 2.1 Install a network operating system.	
Level 2: Skill/Concept	NT 2.2 Configure a network operating system.	

Level 4: Extended Thinking	NT 2.3 Troubleshoot and resolve network problems.	
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INDICATOR # NT 3. Apply knowledge of network security systems.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	NT 3.1 Apply proper procedures for securing a network.	
Level 2: Skill/Concept	NT 3.2 Demonstrate penetration testing and ethical hacking.	

INDICATOR # NT 4. Demonstrate knowledge of common help desk tools, resources and techniques.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	NT 4.1 Use proper documentation and incident reporting.	
Level 3: Strategic Thinking	NT 4.2 Incorporate customer service skills.	

INDICATOR # NT 5. Explore Careers in Network Technology.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	NT 5.1 Identify skills, interests, and abilities related to network technology.	

Level 2: Skill/Concept	NT 5.2 Compare personal interest survey results with network technology occupations.	
Level 3: Strategic Thinking	NT 5.3 Research labor market information for network technology.	
Level 2: Skill/Concept	NT 5.4 Demonstrate necessary job skills needed for information technology industries.	

INDICATOR # NT 6. Maintain a safe and environmentally conscious environment.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	NT 6.1 Determine safe working practices to avoid or eliminate physical and electrical hazards.	
Level 1: Recall	NT 6.2 Research environmental considerations when disposing of material.	

Web Development

Career Cluster	Information Technology
Course Code	10201
Prerequisite(s)	Foundations of Technology (recommended) Introduction to Information Technology (recommended) Computer Science Essentials (recommended)
Credit	.5-1
Program of Study and Sequence	Web Development is an option inside the Programming Pathway.
Student Organization	SkillsUSA, Future Business Leaders of America, CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Informational Interviews, Tours
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Web & Digital Communications Pathway Endorsement; Arts, AV Technology & Communications Cluster Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Web Development I is a course designed to guide students in a project-based environment implementing web development techniques. Using hypertext markup language (HTML5) coding and Cascading Style Sheets (CSS) students will plan, design, develop, deploy, and maintain website projects. Students will learn fundamentals for a career in web development as they complete projects and create their own website.

Program of Study Application: Web Development is an option inside the Programming Pathway.

Note:

All Web Development standards integrate aspects of language arts and mathematics.

Course Standards

INDICATOR # WD 1. Identify basic principles of how the Internet is constructed, how it functions and how it is used.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	WD 1.1 Identify the infrastructure required to access the Internet.	
Level 1: Recall	WD 1.2 Summarize Internet development and functions.	
Level 1: Recall	WD 1.3 Recognize the purpose of domains.	
Level 2: Skill/Concept	WD 1.4 Define the function of a Domain Name Server (DNS).	
Level 1: Recall	WD 1.5 Define important Internet communications protocols and their roles in delivering basic Internet services.	
Level 1: Recall	WD 1.6 Demonstrate knowledge of standard copyright rules.	
Level 2: Skill/Concept	WD 1.7 Explain the use and purpose of acceptable use policy (AUP).	

INDICATOR # WD 2. Demonstrate creation of web pages.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	WD 2.1 Demonstrate knowledge required to create a web page.	
Level 2: Skill/Concept	WD 2.2 Demonstrate appropriate file structure and naming.	
Level 2: Skill/Concept	WD 2.3 Create web pages with appropriate HTML structure and standards that can be validated using World Wide Web Consortium validator (W3C).	
Level 3: Strategic Thinking	WD 2.4 Demonstrate the use of elements and attributes.	
Level 2: Skill/Concept	WD 2.5 Incorporate meta tags for page documentation and search engine optimization (SEO).	

INDICATOR # WD 3. Format web pages using Cascading Style Sheets (CSS).		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	WD 3.1 Apply essential aspects of the CSS.	
Level 2: Skill/Concept	WD 3.2 Apply CSS to a website.	
Level 3: Strategic Thinking	WD 3.3 Use basic selectors in a CSS.	

INDICATOR # WD 4. Plan, design, implement, and maintain website(s).
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<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	WD 4.1 Analyze project requirements.	
Level 3: Strategic Thinking	WD 4.2 Plan site design and page layout.	
Level 4: Extended Thinking	WD 4.3 Create basic content for website.	
Level 4: Extended Thinking	WD 4.4 Edit and revise a site.	

INDICATOR # WD 5. Explore careers in Web Development.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	WD 5.1 Explore Information Technology (IT) Web Development careers.	
Level 2: Skill/Concept	WD 5.2 Demonstrate job skills for programming industries.	



CareerClusters™
PATHWAYS TO COLLEGE & CAREER READINESS

Law, Public Safety, Corrections & Security

State Approved Courses for Law, Public Safety, Security & Corrections Programs

Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

Introduction to Law & Public Safety I (15001^)
Introduction to Law & Public Safety II (15054)

Pathway Courses

Administration & Administrative Support Pathway

Dual Credit Courses
May Include:
Intro to Criminal Justice
Intro to Law Enforcement
Business Law

Professional Support Services Pathway

Dual Credit Courses
May Include:
Intro to Criminal Justice
Intro to Law Enforcement
Psychology of Human Relations

Teaching/Training Pathway

Dual Credit Courses
May Include:
Medical Terminology
Basic Anatomy
Fire Science
Emergency Medical Technician

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Law, Public Safety, Correction & Security Career Cluster.

Academic CTE Courses

Algebra I (02052^)
Psychology (04254^)
Sociology (04258^)
Economics (04201^)
US Government (04151^)
Probability & Statistics (02201^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)

Introduction to Law and Public Safety 1

Career Cluster	Law, Public Safety, Security & Corrections
Course Code	15001
Prerequisite(s)	None
Credit	1.0
Program of Study and Sequence	Foundation courses, Law and Public Safety 1, Law and Public Safety 2, Dual Credit to student's specific pathway, Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job shadowing, mentoring and youth internship opportunities are encouraged
Industry Certifications	First Aid/Cardiopulmonary Resuscitation (CPR)/Automated External Defibrillator (AED) through American Red Cross or American Heart Association as appropriate
Dual Credit or Dual Enrollment	Intro to Criminal Justice; Psychology of Human Relations; Medical Terminology; Intro to Law Enforcement; Basic Anatomy; Fire Science; Emergency Medical Technician Intro Sociology, Intermediate or College Algebra, Tech Writing or Composition 1, General Psychology, Computer Science.
Teacher Certification	Law, Public Safety, Security & Corrections Cluster Endorsement; Social Science Education -Political Science
Resources	Law Enforcement Explorer program, Firefighter cadet/junior volunteer programs; SD Highway Patrol Youth Trooper Academy; Teen Court

Course Description:

Introduction to Law and Public Safety 1 is designed expose students to skills and knowledge recognized as critical for success in careers in legal services, corrections/law enforcement/security and protective services, and fire management/emergency medical services. Topics to be addressed include: career options, lifestyle behaviors, social issues, state and local government, foundations of law, human relations, interpersonal communications, and technical writing.

Program of Study Application

Introduction to Law and Public Safety 1 is the first pathway course in the law and public safety program of study. The course is preceded by the series of foundation courses and followed by Introduction to Law and Public Safety 2, advance studies through dual credit options, and a capstone course.

Course Standards

Indicator LPS-I 1 Identify career opportunities and qualifications needed in law and public safety fields.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	LPS-I 1.1 Explore career paths and qualifications needed for people with legal degrees.	
Level 2: Skill/Concept	LPS-I 1.2 Explore career paths and qualifications needed in the paralegal fields	
Level 2: Skill/Concept	LPS-I 1.3 Explore career paths, qualifications, and physical requirements in law enforcement and corrections	
Level 2: Skill/Concept	LPS-I 1.4 Explore career paths and qualifications in security and protective services	
Level 2: Skill/Concept	LPS-I 1.5 Explore career paths, qualifications, and physical requirements in fire management and Emergency Medical Services (EMS)	
Level 1: Recall	LPS-I 1.6 Identify career advancement potential for each of the career paths	

Indicator LPS-I 2 Analyze the impact of law and public safety work on a person's lifestyle.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>

Level 3: Strategic Thinking	LPS-I 2.1 Identify and analyze the top six factors that influence a person's mental health.	
Level 3: Strategic Thinking	LPS-I 2.2 Synthesize the lifestyle expectations of those in law and public safety careers	

Indicator LPS-I 3 Research societal issues that impact law and public safety careers.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	LPS-I 3.1 Research prominent deviant behaviors within society that may involve law enforcement.	
Level 2: Skill/Concept	LPS-I 3.2 Research criminal behavior within society	
Level 3: Strategic Thinking	LPS-I 3.3 Analyze the role of poverty in people and/or their families and the impact of poverty on behavior.	

Indicator LPS-I 4 Differentiate the differences and similarities of state, county, local, federal, and tribal governments.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	LPS-I 4.1 Explain the jurisdiction associated with each of the different layers of government	
Level 2: Skill/Concept	LPS-I 4.2 Distinguish the constituent similarities and differences of each of the levels of government	

Level 1: Recall	LPS-I 4.3 Identify the unique characteristics of tribal government	
Level 2: Skill/Concept	LPS-I 4.4 Compare and contrast the structures of state, county, local, federal, and tribal governments	
Level 2: Skill/Concept	LPS-I 4.5 Compare and contrast the forms of federalism	
Level 3: Strategic Thinking	LPS-I 4.6 Explain the role federalism plays in the division of power between governmental units	

Indicator LPS-I 5 Summarize how laws are made		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	LPS-I 5.1 Identify the steps of the legislative process in which laws or statutes evolve	
Level 2: Skill/Concept	LPS-I 5.2 Compare the legislative processes of state, county, local, federal and tribal governments	

Indicator LPS-I 6 Identify, analyze, and evaluate constitutional law, common law, statutory law, court decisions, and administrative law.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	LPS-I 6.1 Evaluate and analyze the US legal system from the origin of common law (legal tradition from English law) to our current system of law.	
Level 3: Strategic Thinking	LPS-I 6.2 Demonstrate an understanding of the basis, purpose, and application of constitutional law.	

Level 3: Strategic Thinking	LPS-I 6.3 Demonstrate an understanding of the basis, purpose, and application of statutory law.	
Level 3: Strategic Thinking	LPS-I 6.4 Demonstrate an understanding of the basis, purpose, and application of common law as it applies to case law and precedent.	
Level 3: Strategic Thinking	LPS-I 6.5 Demonstrate an understanding of the basis, purpose, and application of court decisions.	
Level 3: Strategic Thinking	LPS-I 6.6 Demonstrate an understanding of the basis, purpose, and application of administrative law.	
Level 2: Skill/Concept	LPS-I 6.7 Research and analyze components and possible outcomes of criminal law.	
Level 2: Skill/Concept	LPS-I 6.8 Research and analyze components and possible outcomes of civil law.	

	Indicator LPS-I 7 Examine the importance of communication and human relations skills in the workplace and in personal life	
Level 3: Strategic Thinking	LPS-I 7.1 Investigate processes that guide human interactions.	
Level 2: Skill/Concept	LPS-I 7.2 Identify that different settings require different types of behavior, communication styles and relationships.	
Level 2: Skill/Concept	LPS-I 7.3 Examine effective human relations skills that can be utilized in the workplace and in personal life.	
Level 1: Recall	LPS-I 7.4 Identify the purposes and modes of interpersonal communication with peers, colleagues and the public in workplace and social settings.	

Level 3: Strategic Thinking	LPS-I 7.5 Demonstrate effective interpersonal communication with peers, colleagues and the public in workplace and social settings.	
	Indicator LPS-I 8 Understand the basics of technical writing for reports and for accurate and professional documentation in the law and public safety field.	
Level 4: Extended Thinking	LPS-I 8.1 Evaluate why technical writing in the law and public safety field needs to be factual, non-biased, and without conclusion, as opposed to that exhibited in persuasive, personal narrative, critical analysis, research and compare/contrast styles of writing.	
Level 3: Strategic Thinking	LPS-I 8.2 Investigate how to write a case report.	

Introduction to Law and Public Safety 2

Career Cluster	Law and Public Safety
Course Code	15054
Prerequisite(s)	Law and Public Safety 1
Credit	.5
Program of Study and Sequence	Foundation courses, Law and Public Safety 1, Law and Public Safety 2, Dual Credit to student's specific pathway, Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job shadowing, mentoring and youth internship opportunities are encouraged
Industry Certifications	First Aid/Cardiopulmonary Resuscitation (CPR)/Automated External Defibrillator (AED) through American Red Cross or American Heart Association as appropriate
Dual Credit or Dual Enrollment	Intro to Criminal Justice; Psychology of Human Relations; Medical Terminology; Intro to Law Enforcement; Basic Anatomy; Fire Science; Emergency Medical Technician, Intro Sociology, Intermediate or College Algebra, Tech Writing or Composition 1, General Psychology, Computer Science, etc. Some certifications may be recognized for dual credit.
Teacher Certification	Law, Public Safety, Security & Corrections Cluster Endorsement; Social Science Education -Political Science
Resources	Law Enforcement Explorer program, Firefighter cadet/junior volunteer programs; SD Highway Patrol Youth Trooper Academy; Teen Court

Course Description:

Introduction to Law and Public Safety 2 is designed to expose students to skills and knowledge recognized as critical for success in careers in legal services, corrections/law enforcement/security and protective services, and fire management/emergency medical services. Topics to be addressed include: workplace communications, interpersonal relations, workplace ethics, cultural diversity, documentation, constitutional law and foundations of emergency care.

Program of Study Application Introduction to Law and Public Safety 2 is the second pathway course in the law and public safety program of study. The course is preceded by the series of foundation courses and Introduction to Law and Public Safety 1, and followed by advanced studies through dual credit options, and a capstone course.

Course Standards

Indicator LPS-II 1 Communicate effectively through writing, speaking, listening and interpersonal abilities.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	LPS-II 1.1 Differentiate between one-way and two-way communication and identify the role of non-verbal messages in the communication process.	
Level 2: Skill/Concept	LPS-II 1.2 Understand the term “active listening” and explain how it can be used to obtain and clarify job related information.	
Level 3: Strategic Thinking	LPS-II 1.3 Analyze and synthesize technical written communications related to law and public safety.	

Indicator LPS-II 2 Recognize that interpersonal relations at work serve a critical role in the development and maintenance of trust and positive feelings.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	LPS-II 2.1 Identify work readiness traits required for success in the law and public safety workplace.	

Level 2: Skill/Concept	LPS-II 2.2 Compare and contrast strategies for managing anger in the workplace.	
Level 4: Extended Thinking	LPS-II 2.3 Apply conflict and anger management strategies to real-world situations.	

Indicator LPS-II 3 Analyze ethical decisions and their implications in law and public safety careers. .		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	LPS-II 3.1 Apply ethical reasoning and decision making to a variety of workplace situations in compliance with industry code of conduct.	
Level 3: Strategic Thinking	LPS-II 3.2 Investigate personal and long-term consequences of unethical or illegal behaviors.	

Indicator LPS-II 4 Investigate the impact and influences of cultural diversity within Law and Public Safety career fields.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	LPS-II 4.1 Identify basic influencing factors of diversity awareness including culture, ethnicity, race, racism, gender, stereotype, prejudice, sexual orientation, core values, oppression and discrimination.	

Level 3: Strategic Thinking	LPS-II 4.2 Examine geographical and historical influences on cultural groups within the local, state, and global community.	
Level 4: Extended Thinking	LPS-II 4.3 Analyze different social norms, communication norms; body language and non-verbal cues and values of cultural groups.	
Level 4: Extended Thinking	LPS-II 4.4 Analyze differences in power and privilege related to people of culturally diverse backgrounds, beliefs, and practices.	
Level 4: Extended Thinking	LPS-II 4.5 Analyze issues of cultural assimilation and cultural preservation among ethnic and racial groups in South Dakota and the United States.	

Indicator LPS-II 5 Apply appropriate skills in documentation.		
<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 1: Recall	LPS-II 5.1 Describe the components of a police incident report and how it is used as a legal document.	
Level 1: Recall	LPS-II 5.2 Describe tactics and tools used by police during criminal investigation.	
Level 3: Strategic Thinking	LPS-II 5.3 Demonstrate the ability to create a fire incident report	
Level 3: Strategic Thinking	LPS-II 5.4 Demonstrate understanding of the documentation needed using appropriate medical terminology for emergency medical response	

Level 4: Extended Thinking	LPS-II 5.5 Analyze different forms of legal correspondence	
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Indicator LPS-II 6 Explore US Constitution, Bill of Rights, SD laws, and other amendments which impact the Law and Public Safety profession.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	LPS-II 6.1 Analyze the impact of the Bill of Rights and constitutional amendments as they pertain to Law and Public Safety workplaces.	
Level 2: Skill/Concept	LPS-II 6.2 Summarize the concepts and procedures related to due process.	
Level 4: Extended Thinking	LPS-II 6.3 Analyze the impact of judicial interpretation of the Constitution and its legal ramifications.	
Level 2: Skill/Concept	LPS-II 6.4 Explore SD codified law Title 22 and Title 32.	
Level 2: Skill/Concept	LPS-II 6.5 Explore SD domestic violence laws, definitions, and support services.	

Indicator LPS-II 7 Demonstrate skills in first aid, cardiopulmonary resuscitation (CPR) and automated external defibrillation (AED) to certification standards of the American Heart Association or the American Red Cross.

<i>Webb Level</i>	<i>Sub-Indicator</i>	<i>Integrated Content</i>
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Level 2: Skill/Concept	LPS-II 7.1 Understand how to perform First Aid for Students and/or CPR for Students and/or how to use an AED.	
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Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Entrepreneurship (12053^)
Foundations of Technology (10004^)
Leadership & Service (22101^)

Cluster Courses

Introduction to Manufacturing (13001)
Intro to Technical Education (21051)
Electronics (17106)
Introduction to Drafting & Design (21102)
MS Intro to STEM (21050)
MS Mechatronics/Robotics (21049)

Pathway Courses

Welding Pathway	Precision Machining Pathway	Design & Engineering Pathway	Automation Pathway
Welding Technology (13207) Advanced Welding Technology (13208) Ag Metal Fabrication (18404)	Machine Tool Technology (13203) Advanced Machine Tool Technology (13204)	Introduction to Engineering (21001) Engineering Design & Development (21007) Mechanical Drafting & Design (21106)	Robotics (21009) Welding Technology (13207) Advanced Welding Technology (13208) Machine Tool Technology (13203) Advanced Machine Tool Technology (13204)

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Manufacturing Career Cluster.

Supporting Academic Courses

Geometry (02072^)
Pre-Calculus (02110^)
Physics (03151^)

Capstone CTE Courses

Entrepreneurship Experience (80026)
Senior Experience (80019^)
Youth Apprenticeship (80020)
Service Learning (22104)
Youth Internships (80018^)

^Denotes course is available on the SD Virtual School (<http://www.sdv.s.k12.sd.us/>)



Introduction to Manufacturing

Career Cluster	Manufacturing
Course Code	13001
Prerequisite(s)	None
Credit	0.5 per semester
Program of Study and Sequence	Foundation courses – Introduction to Manufacturing – entry pathway course in any of four manufacturing pathways - Capstone
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	7-12 Technology Education; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Manufacturing Cluster Endorsement
Resources	South Dakota Manufacturing Website

Course Description

Introduction to Manufacturing provides entry level exposure and career exploration in the manufacturing industry. This introductory course teaches students the skills common to all manufacturing occupations such as reading technical drawings, safety, and using tools. Students will learn the process of the manufacturing industry by designing and producing a product.

Program of Study Application

Introduction to Manufacturing is a cluster course in the Manufacturing program of study. Upon completion of Introduction to Manufacturing, a student will be prepared to take an entry pathway course in any of the four manufacturing pathways: welding, machining, design/engineering, or automation.

Course Standards

IM 1: Career exploration and development.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IM 1.1 Research the various career pathways/occupations that are available in manufacturing process/industry/business.
Four Extended Thinking	IM 1.2 Design a personal learning plan for career interest in the manufacturing cluster.
Two Skill/Concept	IM 1.3 Explain trends and issues in the manufacturing industry.

IM 2: Research various manufacturing plans/drawings.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IM 2.1 Identify the features of a manufacturing plan or technical drawing.
One Recall	IM 2.2 Identify various measurement tools used in manufacturing.
Two Skill/Concept	IM 2.3 Utilize various measurement tools used in manufacturing with precision.
Two Skill/Concept	IM 2.4 Apply mathematical concepts to measurement techniques.

IM 3: Implement manufacturing safety practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IM 3.1 Identify and demonstrate general safety in accordance with government regulations, health standards, and company and/or school policy.
One Recall	IM 3.2 Identify ergonomic measures to prevent worker fatigue and injury.

IM 4: Apply career readiness skills in the workplace as they relate to today's society.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IM 4.1 Identify and demonstrate career readiness (soft skills) in the workplace.

IM 5: Utilize the appropriate tools and equipment used in the manufacturing industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IM 5.1 Research and understand basic manufacturing tools.
Two Skill/Concept	IM 5.2 Use basic tools and equipment common to the manufacturing processes.

IM 6: Manufacture a product.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IM 6.1 Interpret or create basic technical drawings/plans.
Four Extended Thinking	IM 6.2 Develop a prototype of a product.
Four Extended Thinking	IM 6.3 Test and evaluate a product.
Four Extended Thinking	IM 6.4 Redesign product for final production.



Advanced Machine Tool Technology

Career Cluster	Manufacturing
Course Code	13204
Prerequisite(s)	Algebra 1/Machine Tool Technology
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster course – Machine Tool Technology – Advanced Machine Tool Technology – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	7-12 Technology Education; Machine Tool; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	OSHA/NIMS

Course Description

Advanced Machine Tool Technology students will perform advanced machining processes in the areas of safety, applied math skills and machining operations. The goal is for the student to use learned techniques from machine tool technology to obtain higher levels of competency through creation of projects to emulate industry needs.

Program of Study Application

Advanced Machine Tool Technology is the second pathway course in the Manufacturing cluster, Machining pathway. Machine tool technology is a prerequisite to the Advanced Machining course.

Course Standards

AMT 1: Demonstrate knowledge of safety and essential academic concepts in machine tool.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AMT 1.1 Prove knowledge of shop operations and tool safety procedures consistent with Occupational Safety and Health Administration (OSHA) standards.
Two Skill/Concept	AMT 1.2 Apply advanced concepts, including machine tool mathematics, mechanical drawing, science, and communications to machine tool processes.
Two Skill/Concept	AMT 1.3 Demonstrate and apply computer numerical control (CNC) programming concepts.

AMT 2: Demonstrate machine use and functions, utilizing problem solving skills to resolve machining issues.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AMT 2.1 Utilize prior knowledge of tools, methods of measurement, materials, and material layout.
Three Strategic Thinking	AMT 2.2 Set up and run lathe and milling machines to do advanced machining operations.
Four Extended Thinking	AMT 2.3 Evaluate and solve issues related to lathe and milling setups and operations.

AMT 3: Apply career readiness skills in the workplace as they relate to today's society.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AMT 3.1 Identify and demonstrate career readiness (soft skills) in the workplace.

AMT 4: Machine tool technology career exploration and development.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AMT 4.1 Define and compare career pathways in machine tool technology.
Four Extended Thinking	AMT 4.2 Design a personal learning plan for career interest in machine tool technology.
Two Skill/Concept	AMT 4.3 Explain trends and issues in machine tool technology careers.



Advanced Welding Technology

Career Cluster	Manufacturing
Course Code	13208
Prerequisite(s)	Welding Technology
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Welding Technology – Advanced Welding Technology – Welding Engineering or Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Welding; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	AWS, NCCER, and Industry

Course Description

Advanced Welding provides students with opportunities to effectively perform cutting and welding applications of increasing complexity used in the advanced manufacturing industry. Proficient students will build on the knowledge and skills of the Welding Technology course while learning additional welding techniques not covered in previous courses. Specifically, students will be proficient in fundamental safety practices in welding, gas metal arc welding (GMAW) and other advanced welding and cutting processes. Upon completion of the Advanced Welding Technology course, proficient students will be prepared to complete the American Welding Society (AWS) Entry Welder qualification and certification.

Program of Study Application

Advanced Welding Technology is the second pathway course in the Manufacturing cluster, welding pathway. Welding Technology is a prerequisite for this course. The course may be followed by further dual-enrollment studies or a capstone experience.

Course Standards

AWT 1: Implement welding safety practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AWT 1.1 Identify and demonstrate general safety in accordance with government regulations, health standards, and company and/or school policy.

AWT 2: Integrate core academic concepts as used in the welding industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AWT 2.1 Demonstrate mathematical skills related to work assignments.
Two Skill/Concept	AWT 2.2 Communicate using welding terms and definitions from American National Standards Institute (ANSI)/American Welding Society (AWS) A3.0, Standard Welding Terms and Definitions.

AWT 3: Interpret, layout, and fabricate in conformance to fabrication drawings.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AWT 3.1 Interpret and apply dimensions and locations of components in fabrication drawings.
Four Extended Thinking	AWT 3.2 Layout and fabricate according to the fabrication drawing industry standards.

AWT 4: Perform other advanced cutting processes.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AWT 4.1 Identify and explain the safety, parts, and operation of thermal cutting equipment.
Two Skill/Concept	AWT 4.2 Prepare layouts for cutting individual parts.
Three Strategic Thinking	AWT 4.3 Perform cuts using thermal cutting processes.

AWT 5: Perform Gas Metal Arc Welding (GMAW) process.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AWT 5.1 Identify and understand the safety, parts, and operation of GMAW.
Two Skill/Concept	AWT 5.2 Prepare base metal for various welding processes.
Three Strategic Thinking	AWT 5.3 Demonstrate Gas Metal Arc Welding (GMAW) on steel.

AWT 6: Identify and demonstrate knowledge of the inspection of welding and cutting processes.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AWT 6.1 Visually inspect a weld.
Two Skill/Concept	AWT 6.2 Examine thermally cut surfaces and edges for discontinuities.

AWT 7: Perform other advanced welding processes.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AWT 7.1 Identify and understand the safety, parts, and operation of another advanced welding process.
Two Skill/Concept	AWT 7.2 Prepare base metal for various welding processes.
Three Strategic Thinking	AWT 7.3 Demonstrate another advanced welding process on steel.

AWT 8: Welding technology career exploration and development.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AWT 8.1 Define and compare career pathways in welding technology.
Four Extended Thinking	AWT 8.2 Design a personal learning plan for career interest in welding technology.
Two Skill/Concept	AWT 8.3 Explain trends and issues in welding technology careers.

AWT 9: Apply career readiness skills in the workplace as they relate to today's society.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	AWT 9.1 Identify and demonstrate career readiness (soft skills) in the workplace.



Machine Tool Technology

Career Cluster	Manufacturing
Course Code	13203
Prerequisite(s)	Algebra 1 Recommended
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Manufacturing Cluster Course – Machine Tool Technology – Advanced Machine Tool Technology – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, field trips, internships, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	7-12 Technology Education; Machine Tool; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	

Course Description

Machine Tool Technology students will demonstrate machining processes, safety, math skills, and machining operations. The goal is for the student to succeed at a basic level through building projects with various machining tools. This course is designed to introduce students to careers in the machine tool industry.

Program of Study Application

Machine Tool Technology is a pathway course in the Manufacturing cluster Machining pathway. This course follows a cluster course and is a prerequisite for Advanced Machine Tool Technology.

Course Standards

MT 1: Demonstrate knowledge of safety and essential academic concepts in machine tooling.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MT 1.1 Demonstrate knowledge of machine shop operations and tool safety procedures consistent with Occupational Safety and Health Administration (OSHA) standards.
One Recall	MT 1.2 Introduce concepts of basic mathematics, mechanical drafting, science, tool terminology and communications used in machine tool processes.
Two Skill/Concept	MT 1.3 Demonstrate basic CNC programming and processes.

MT 2: Show proper machine use and functions, utilizing problem solving skills to resolve machining issues.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MT 2.1 Demonstrate knowledge of tools, methods of measurement, materials, and material layout.
Three Strategic Thinking	MT 2.2 Set up and run lathe and milling machines to do basic machining operations.
Four Extended Thinking	MT 2.3 Demonstrate testing and problem-solving skills in basic lathe and milling setups and operations.

MT 3: Apply career readiness skills in the workplace as they relate to today's society.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MT 3.1 Identify and demonstrate career readiness (soft skills) in the workplace.

MT 4: Machine tool technology career exploration and development.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MT 4.1 Define and compare career pathways in machine tool technology.
Four Extended Thinking	MT 4.2 Design a personal learning plan for career interest in machine tool technology.
Two Skill/Concept	MT 4.3 Explain trends and issues in machine tool technology careers.



Mechanical Drafting and Design

Career Cluster	Manufacturing
Course Code	21106
Prerequisite(s)	Drafting and Design I course 21102 (recommended)
Credit	1.0
Program of Study and Sequence	Drafting and Design I – Mechanical Drafting and Design – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, internships, tours
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	7-12 Technology Education; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Drafting; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	

Course Description

People with careers in mechanical drafting, design, and engineering create our future. They turn a concept into a set of plans whether it is a component or assembly. These plans will guide manufacturing professionals as they continue the manufacturing process. Mechanical Drafting and Design will expose students to the American Design Drafting Association (ADDA) Apprentice standards in mechanical drafting and students will be given the option to take the ADDA Apprentice drafting test.

Program of Study Application

This is the second pathway course in the Manufacturing cluster, Design and Engineering pathway. Drafting and Design I Course number 21102 is a recommended prerequisite for this course. The course would be followed by a capstone experience.

Course Standards

MDD 1: Demonstrate the use of geometric construction

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MDD 1.1 Apply geometric design and mechanical drafting to the design process.
Three Strategic Thinking	MDD 1.2 Demonstrate basic geometric dimensioning and tolerancing (GD&T).

MDD 2: Prepare mechanical drawings.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MDD 2.1 Create a multi-view drawing.
Two Skill/Concept	MDD 2.2 Examine drawing identification and management techniques used in mechanical drafting.
Three Strategic Thinking	MDD 2.3 Create sectional views of a mechanical drawing.
Three Strategic Thinking	MDD 2.4 Develop auxiliary views of mechanical drawings.
Three Strategic	MDD 2.5 Generate pictorial drawings.

MDD 3: Understand the design for manufacturing and assembly.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MDD 3.1 Analyze different manufacturing processes.
One Recall	MDD 3.2 Identify basic welding symbols used in the manufacturing design process.

MDD 4: Mechanical drafting career exploration and development.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MDD 4.1 Define and compare career pathways in mechanical drafting.
Four Extended Thinking	MDD 4.2 Design a personal learning plan for career interest in mechanical drafting.
Two Skill/Concept	MDD 4.3 Explain trends and issues in mechanical drafting careers.

MDD 5: Apply career readiness skills in the workplace as they relate to today's society.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MDD 5.1 Identify and demonstrate career readiness (soft skills) in the workplace.



Welding Technology

Career Cluster	Manufacturing
Course Code	13207
Prerequisite(s)	None
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster Course – Welding Technology – Advanced Welding Technology – Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, field trips, internships and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Welding; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	AWS, National Center for Construction Education (NCCER), and Industry

Course Description

Welding Technology provides students with an understanding of manufacturing processes and systems common to careers in welding and related industries. Welding Technology is based on, but not limited to, American Welding Society (AWS) Guidelines for the Entry Level Welder. Students will be able to perform Shielded Metal Arc Welding and thermal cutting processes.

Program of Study Application

Welding Technology is the first pathway course in the Manufacturing cluster, welding pathway. It follows a cluster course and is a prerequisite for the Advanced Welding course.

Course Standards

WT 1: Implement welding safety practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	WT 1.1 Identify and demonstrate general safety in accordance with government regulations, health standards, and company and/or school policy.

WT 2: Integrate core academic concepts as used in the welding industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	WT 2.1 Apply mathematical concepts to measurement techniques.
One Recall	WT 2.2 Read, comprehend, and communicate welding terms and definitions from American National Standards Institute (ANSI)/American Welding Society (AWS) A3.0, <i>Standard Welding Terms and Definitions</i> .

WT 3: Interpret drawings and welding symbol information.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	WT 3.1 Identify basic weld symbols and joints.
Two Skill/Concept	WT 3.2 Use appropriate lines in welding drawing.
Three Strategic Thinking	WT 3.3 Read and sketch drawings.

WT 4: Perform thermal cutting operations.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	WT 4.1 Identify and explain the safety, parts, and operation of thermal cutting equipment.
Two Skill/Concept	WT 4.2 Prepare layouts for cutting individual parts.
Three Strategic Thinking	WT 4.3 Perform cuts using thermal cutting processes.



CareerClusters™
PATHWAYS TO COLLEGE & CAREER READINESS

**State Approved Courses for
Marketing Programs
Approved April 2023**

Foundational CTE Courses

Career Exploration (22151) Employability (22152) Entrepreneurship (12053) Workplace Technology Skills (10004) Leadership & Service (22101)

Cluster Courses

Marketing Principles (12164) Marketing Strategies (12152) Marketing Research (12167)

Pathways/Courses

Marketing Management Pathway

International Business & Marketing (12056)
Sports and Entertainment Marketing (12163)

Merchandising Pathway

Principles of Selling (12202)

Marketing Communications Pathway

Marketing Communication (12199)

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Marketing Career Cluster.

Academic CTE Courses

Probability & Statistics (02201) Psychology (04254^) Sociology (04258^) Economics (04201^) US Government (04151^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^) Youth Apprenticeship (80020) Service Learning Experience (22104) Youth Internships (80018^)



International Business and Marketing

Career Cluster	Marketing
Course Code	12056
Prerequisite(s)	Marketing Principles recommended
Credit	0.5 to 1.0
Program of Study and Sequence	Marketing Principles– International Business and Marketing – additional pathway course or Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA), Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Job shadow, mentoring, informational interviews, internships
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Business Management & Administration Cluster Endorsement; Business Marketing & Management Pathway Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities & Investments Pathway Endorsement; Sales, Merchandising & Marketing Research Support Pathway Endorsement; *Business Education; *Marketing Education
Resources	N/A

Course Description

International Business and Marketing will introduce students to the tools and terminology needed to explore and understand marketing practices in a global environment. The scope and challenge of international marketing, the dynamic environment of international business, and ways to develop global marketing strategies will be examined.

Program of Study Application

International Business and Marketing is a pathway course in the Marketing career cluster, Marketing Management pathway.

Course Standards

IBM 1: Students will understand the scope of international business.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	IBM 1.1 Define international business.
One Recall and Recognition	IBM 1.2 Identify, explore, and research career opportunities in international business.

IBM 2: Students will understand ethical challenges unique to international marketing.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	IBM 2.1 Apply ethical reasoning to a variety of international situations to make ethical decisions.
Two Skill/Concept	IBM 2.2 Understand the role of international law and evaluate alternative responses to workplace situations.

IBM 3: Students will understand the factors included in an international marketing plan.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IBM 3.1 Research and identify current international business trends and innovations. ● Understand the role of culture in international business and marketing
Two Skill/Concept	IBM 3.2 Explain economic factors that affect international market entry.
Three Strategic Thinking	IBM 3.3 Understand environmental factors and conduct an environmental scan for an international market.
Three Strategic Thinking	IBM 3.4 Identify different market entry strategies and the risk and return associated with each.
Three Strategic Thinking	IBM 3.5 Identify different modifications used within the marketing mix to effectively market internationally. ● Understand the role of collecting, analyzing, and applying marketing data

Marketing Communication

Career Cluster	Marketing
Course Code	12199
Prerequisite(s)	Marketing Principles recommended
Credit	0.5
Program of Study and Sequence	Marketing Principles – Marketing Communication – Capstone Experience
Student Organization	Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Field trip, mentoring, guest speaker
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Sales, Merchandising, & Marketing Research Support Pathway Endorsement; *Business Education; *Marketing Education
Resources	N/A

Course Description

Marketing Communication introduces the student to the basic concepts of marketing communications and links this communication to strategic planning, product and pricing decisions, and distributions and promotional decisions. Examples of marketing communication activities include advertising, direct marketing, public relations, sales promotion, personal selling, and digital marketing.

Program of Study Application

Marketing Communications is a pathway course in the Marketing career cluster, Marketing Communications pathway.

Course Standards

MC 1: Students will understand the concept of integrated marketing communication (IMC).

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MC 1.1 Define the concept of integrated marketing communication.
Two Skill/Concept	MC 1.2 Understand the role of IMC in developing effective marketing plans.
Three Strategic Thinking	MC 1.3 Assess the evolving ways marketing information is delivered and accessed by businesses and consumers.
Three Strategic Thinking	MC 1.4 Explore various career opportunities within the advertising and communication industries.

MC 2: Students will understand the communication process in relation to promotional programs.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MC 2.1 Detail the steps in the overall communication process for promotional programs.
Three Strategic Thinking	MC 2.2 Establish communication goals and objectives.

MC 3: Students will understand development of an integrated promotional mix.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MC 3.1 Identify the elements of integrated promotional mix.
Two Skill/Concept	MC 3.2 Understand the role and importance of various promotional mix elements in achieving marketing communication goals.

MC 4: Students will understand the integrated marketing communication message strategy and its execution.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MC 4.1 Determine the purpose and desired outcomes of the IMC message.
Two Skill/Concept	MC 4.2 Determine how the message fits with your desired target market.

MC 5: Students will determine media strategy and its objectives.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MC 5.1 Identify various media vehicles to deliver the IMC message.
Two Skill/Concept	MC 5.2 Determine media objectives to achieve communication goals.

MC 6: Students will evaluate the integration and implementation of the IMC plan.

<i>Webb Level</i>	<i>Sub-indicator</i>
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Three Strategic Thinking	MC 6.1 Analyze an example of a marketing communication implementation plan with objectives, timelines, and checkpoints.
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Marketing Principles

Career Cluster	Marketing
Course Code	12164
Prerequisite(s)	Recommended pre-requisite for all other Marketing courses
Credit	0.5
Program of Study and Sequence	Foundational Course - Marketing Principles - Pathway Course
Student Organization	Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Job Shadow; mentoring; guest speakers; tours; informational interviews.
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Business Management & Administration Cluster Endorsement; Business Marketing & Management Pathway Endorsement; Marketing Cluster Endorsement; *Marketing Education
Resources	N/A

Course Description

Marketing Principles introduces students to the basic concepts of modern marketing. Course content includes general marketing principles of product planning and production, distribution, pricing and promotions.

Program of Study Application

Marketing Principles is a cluster course in the Marketing career cluster. Successful completion of this course would prepare a student to enter any of the pathways within the cluster.

Course Standards

MP 1: Students will understand the fundamental concepts of marketing.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MP 1.1 Define marketing, the marketing process and the involved stakeholders.
One Recall and Recognition	MP 1.2 Define marketing concept (i.e. production, product, sales, societal marketing).
Two Skill/Concept	MP 1.3 Understand different marketing functions within the organization.
Two Skill/Concept	MP 1.4 Define ethical marketing and discuss the impact on society.
Three Strategic Thinking	MP 1.5 Explain marketing's importance in a global economy.
One Recall and Recognition	MP 1.6 Understand various marketing careers.

MP 2: Students will understand the relationships among product, price, promotion, and place.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MP 2.1 Explain the promotional mix, its concepts and strategies.
Two Skill/Concept	MP 2.2 Distinguish factors involved in price planning.
Three Strategic Thinking	MP 2.3 Analyze product planning and development.
Two Skill/Concept	MP 2.4 Identify and evaluate the channels of distribution.

MP 3: Students will understand the concept of a market and market identification.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MP 3.1 Define market and terms related to the concept of market.
Two Skill/Concept	MP 3.2 Understand various ways used to segment a market.
Three Strategic Thinking	MP 3.3 Identify potential target markets for various products and services.
Two Skill/Concept	MP 3.4 Understand how market segmentation is evolving and increasing.

MP 4: Students will understand the concept of marketing research and how it relates to marketing.

<i>Webb Level</i>	<i>Sub-indicator</i>
One	MP 4.1 Define market research, its importance and purpose.

Recall and Recognition	
Two Skill/Concept	MP 4.2 Identify various research data from primary to secondary and quantitative to qualitative.
Two Skill/Concept	MP 4.3 Discuss the benefits of marketing research.

MP 5: Students will explain the importance and function of a marketing plan.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MP 5.1 Identify marketing goals, objectives and strategies.
Three Strategic Thinking	MP 5.2 Analyze current successful and unsuccessful examples of marketing activities.
One Recall and Recognition	MP 5.3 Understand the process and purpose of a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis.
Four Extended Thinking	MP 5.4 Create a marketing plan.



Marketing Research

Career Cluster	Marketing
Course Code	12167
Prerequisite(s)	Marketing Principles recommended
Credit	0.5
Program of Study and Sequence	Foundation Course – Marketing Principles – Marketing Research – pathway course
Student Organization	Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Mentoring; job shadow; informational interviews
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Marketing Cluster Endorsement; Sales, Merchandising & Marketing Research Support Pathway Endorsement; *Marketing Education
Resources	N/A

Course Description

Marketing Research describes the process of acquiring, classifying and interpreting primary and secondary marketing data. The course of study focuses on the system (planning, collecting, processing and implementing information) for conducting research to determine marketing strategies and decisions.

Program of Study Application

Marketing Research is a pathway course within the Marketing career cluster, all career pathways.

Course Standards

MR 1: Students will understand marketing research as a career and marketing discipline.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	MR 1.1 Identify and explore career opportunities in marketing research.
Two Skill/Concept	MR 1.2 Understand the use of marketing research in making informed business and marketing decisions.
Two Skill/Concept	MR 1.3 Understand the concept of big data and its implications in business.
Four Extended Thinking	MR 1.4 Apply ethical reasoning to a variety of situations to make ethical decisions.

MR 2: Students will understand the marketing research process.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MR 2.1 Assess marketing information needs to develop a marketing information management system.
Two Skill/Concept	MR 2.2 Understand various research data from primary to secondary and quantitative to qualitative.
Four Extended Thinking	MR 2.3 Design quantitative and qualitative marketing research activities to ensure adequacy of data collection efforts.
Four Extended Thinking	MR 2.4 Analyze secondary marketing data to ensure accuracy and adequacy of information for decision making.
Four Extended Thinking	MR 2.5 Implement primary marketing research strategy to test hypotheses and/or to resolve issues.
Three Strategic Thinking	MR 2.6 Correlate marketing data that aid in the decision-making process.
Four Extended Thinking	MR 2.7 Apply statistical methods to aid in data interpretation.

MR 3: Students will report research findings for use in making strategic marketing decisions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MR 3.1 Report findings to communicate research information with various stakeholders.
Four Extended Thinking	MR 3.2 Manage marketing information to analyze, predict and recommend successful marketing strategies.



Principles of Selling

Career Cluster	Marketing
Course Code	12202
Prerequisite(s)	Marketing Principles recommended
Credit	0.5
Program of Study and Sequence	Marketing Principles – Principles of Selling – Other pathway course or Capstone Experience
Student Organization	Family, Career and Community Leaders of America (FCCLA) – Future Business Leaders of America (FBLA)
Coordinating Work-Based Learning	Tours, Job Shadows, Informational Interviews
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Business Management & Administration Cluster Endorsement; Marketing Cluster Endorsement; Finance Cluster Endorsement; Banking Services & Business Finance Pathway Endorsement; Insurance, Securities & Investments Pathway Endorsement; *Business Education; *Marketing Education
Resources	N/A

Course Description

Principles of Selling offers students an overview of the sales career and sales process. Topics include principles of selling, consumer and business buying behavior, the sales process and customer relationship management.

Program of Study Application

Principles of Selling is a pathway course in the Marketing career cluster, Professional Sales pathway.

Course Standards

PS 1: Students will understand the role of sales.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Recognition	PS 1.1 Identify and explore sales career opportunities.
One Recall and Recognition	PS 1.2 Identify the promotional mix.
Two Skill/Concept	PS 1.3 Identify the role of sales in the promotional mix.

PS 2: Students will understand the unique challenges of ethical decisions in sales.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	PS 2.1 Apply ethical reasoning to a variety of workplace situations in order to make ethical decisions.
Two Skill/Concept	PS 2.2 Evaluate alternative responses to workplace situations based on legal responsibilities and employer policies.
Two Skill/Concept	PS 2.3 Evaluate alternative responses to workplace situations based on personal or professional ethical responsibility.
Three Strategic Thinking	PS 2.4 Identify and explain personal and long-term workplace consequences of unethical or illegal behaviors.

PS 3: Students will understand consumer and business buying behavior.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 3.1 Differentiate between consumer needs and wants.
Two Skill/Concept	PS 3.2 Identify the consumer decision-making process.
Two Skill/Concept	PS 3.3. Understand the difference between business to consumer and business to business sales.
Two Skill/Concept	PS 3.4 Understand unique aspects of business buying behavior.

PS 4: Students will understand the sales process.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 4.1 Understand the steps in the sales process.
Two Skill/Concept	PS 4.2 Explain lead generation and qualification.
Three Strategic Thinking	PS 4.3 Identify and utilize needs assessment.
Three Strategic Thinking	PS 4.4 Demonstrate the sales presentation.
Three	PS 4.5 Identify customer concerns and strategies to handle objections.

Strategic Thinking	
Three Strategic Thinking	PS 4.6 Identify when and how to close a sale.
Two Skill/Concept	PS 4.7 Determine the importance of follow up within the sales process.

PS 5: Students will identify the importance of customer relationship management (CRM).

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PS 5.1 Understand the customer relationship management concept.
Three Strategic Thinking	PS 5.2 Explore available CRM technologies.



Sports and Entertainment Marketing

Career Cluster	Marketing
Course Code	12163
Prerequisite(s)	Marketing Principles
Credit	0.5-1
Program of Study and Sequence	Foundation Course – Marketing Principles - Sports and Entertainment Marketing - Capstone Course
Student Organization	FBLA
Coordinating Work-Based Learning	Job shadowing, guest speakers, field trips, informational interview, mentoring
Industry Certifications	N/A
Dual Credit or Dual Enrollment	https://sdmylife.com/prepping-for-college/dual-credit
Teacher Certification	Marketing Cluster Endorsement; *Marketing Management Pathway Endorsement
Resources	N/A

Course Description

Sports and Entertainment Marketing helps students develop a thorough understanding of marketing concepts and theories through sports and entertainment events. Students will develop a thorough understanding of advanced marketing concepts and theories as they relate to the sports and entertainment industries. Students will investigate the components of branding, sponsorships and endorsements, as well as promotion plans needed for sports and entertainment events. The course also supports career development skills and explores career options.

Program of Study Application

Sports and Entertainment Marketing is a pathway course in the Marketing career cluster, sports and entertainment marketing pathway.

Course Standards

SEM 1: Summarize the significance and components of sports and entertainment as a viable industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM1 1.1 Discuss the components of the marketing mix as it relates to sports and entertainment marketing. • Define sports and event marketing, marketing, exchange, producer, consumer, etc. • Describe the “Four Ps” of sports and entertainment marketing. • Explain the marketing functions and activities.
Four Extended Thinking	SEM1 1.2 Validate the sports and entertainment industry as a valuable segment of the economy. • Describe activities to market non-sports products using sports. • Explain reasons for using sports as a medium for promotion. • Distinguish the different roles of people in sports. • Investigate the history of sports and entertainment as a factor in economic growth and marketing.
Four Extended Thinking	SEM1 1.3: Organize the components of the sports and entertainment industry. • Dissect components of the event triangle: event, sponsor, and fan. • Diagram the exchanges developed in the event triangle. • Separate the effects of media broadcasting on the event triangle.

SEM 2: Explore careers in the sports and entertainment industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	SEM 2.1 Identify career opportunities in the field.
Two Skill/Concept	SEM 2.2 Research a career in the sports and entertainment industry

SEM 3: Explain the organizational structure within the sports and entertainment industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM 3.1 Distinguish between the different types of organizational structures such as sport governing bodies, sport providing entities, and sport spectacle organization (e.g. NBA, PGA, entertainment group) within the sports and entertainment industry.
Two Skill/Concept	SEM 3.2 Explain the advantages and disadvantages of operating as a for-profit or not-for-profit organization.
Two Skill/Concept	SEM 3.3 Compare the differences in goals between different levels of events and relative benefits to the community. (ie: a national football team and a little league team.)

SEM 4: Explain how marketing management is an important tool in developing marketing strategies.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM 4.1 Explain marketing management as it relates to sports and entertainment marketing.

Two Skill/Concept	SEM 4.2 Describe the levels of management and illustrate the levels on organizational charts.
One Recall	SEM 4.3 Identify management functions such as marketing, accounting, and IT.
Three Strategic Thinking	SEM 4.4 Analyze the marketing manager's role in decision making as it relates to a sports team, cultural event, or festival.
Three Strategic Thinking	SEM 4.5 Evaluate the skills and characteristics of sports and entertainment marketing managers.

SEM 5: Explain how market analysis is applied in the sports and entertainment industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	SEM 5.1 Identify the types of market segmentation.
One Recall	SEM 5.2 Identify niche markets in the sports and entertainment industry.
Three Strategic Thinking	SEM 5.3 Develop a market segmentation analysis.
One Recall	SEM 5.4 Describe external factors and how they affect the sports and entertainment industry.
One Recall	SEM 5.5 Outline the steps in developing a market research project as it relates to sports and entertainment.

SEM6: Interpret the importance of product planning in sports and entertainment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SEM 6.1 Explain the value of product research and development. • Explain the issues related to product selection and brand naming. • Classify demographic and geographic information in sports and entertainment. • Understand the importance of market research and analysis in market segmentation
Three Strategic Thinking	SEM 6.2 Explain how fans and the audience can be involved in different types of events. • Identify and define types of events. • Discuss media distribution of events. • Identify ways for fans or the audience to be involved in events.
Three Strategic Thinking	SEM 6.3 Evaluate considerations involved in facility design. • Examine operating procedures for a facility. • Evaluate support activities in operating a sports or entertainment facility. • Examine various facility designs.
Two Skill/Concept	SEM 6.4 Compare ticket sales policies in the sports and entertainment industry. • Contrast the benefits of group, corporate, season and pre-season ticket sales. • Compare ticket pricing strategies for separate target markets. • Identify the components of ticket design.

SEM 7: Examine sponsorships in the sports and entertainment industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM 7.1 Research the role and components of sponsorships. - Describe reasons a company would be involved in an event or sports property. - Use goals of sponsorship to develop and assess effective sponsorships. - Identify and discuss the desire for event exclusivity-importance in sponsorship.
Three Strategic Thinking	SEM 7.2 Identify why businesses sponsor a sports or entertainment property or event. - Determine sponsorship goals and objectives and their use in sponsorships. - Recognize major goals of sponsorship. - Discuss SWOT (Strengths, Weaknesses, Opportunities, and Threats) concept and evaluation applications in sponsorship.
Four Extended Thinking	SEM 7.3 Appraise the impact of sponsorship in sports and entertainment. - Question the importance and use of marketing plans in sports. - Identify and describe target marketing efforts of sponsors to fans or audiences at events. - Explain the components and costs associated with sponsorship proposals. - Identify types of sponsorship sales and relationship development. - Assess the importance of sponsorship in concessions, event planning, advertising, and facility design.

SEM 8: Create promotional tools used in sports and entertainment.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	SEM 8.1 Create promotional tools in sports and entertainment. - Create an advertising campaign. - Measure the value of advertising in sports and entertainment.
Four Extended Thinking	SEM 8.2 Generate ideas for public relations as an element of the promotional mix. - Generate media sources for public relations and advertising. - Evaluate using publicity in sports and entertainment. - Create a media kit for a sports team.
Two Skill/Concept	SEM 8.3 Identify the steps in the event planning process. - Identify the time, money and personnel needed to execute an event. - Evaluate the differences between traditional and nontraditional methods of event sales promotion. - Judge the value of event sales promotion tools in sports and entertainment.
Three Strategic Thinking	SEM 8.4 Determine the components of a sports or entertainment marketing plan. - Explore existing marketing plans and their application in business. - Develop an outline for a conventional marketing plan. - Create a marketing plan for a sports or entertainment company.

SEM 9: Discuss the importance of ethics and analyze the legal aspects of the sports and entertainment industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM 9.1 Discuss ethical issues that may arise in the sports and entertainment industry.
Two Skill/Concept	SEM 9.2 Explain risk management and its relationship to the sports and entertainment industry.
One Recall	SEM 9.3 Identify purposes, types and terms of contracts including copyrights, trademarks, and licensing.
Three Strategic Thinking	SEM 9.4 Explain the impact of the Americans with Disabilities Act (ADA) on sports and entertainment events and facilities.

SEM 10: Calculate revenues and expenses to evaluate profitability.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	SEM 10.1 Identify revenue sources and expenses in the sports and entertainment industry.
Two Skill/Concept	SEM 10.2 Create a budget with all the components of financial transparency, such as price levels, and market depth.
Three Strategic Thinking	SEM 10.3 Analyze financial statements.

SEM 11: Create a plan for a sporting or entertainment event.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	SEM 11.1 Determine the personnel needs for an event.
Two Skill/Concept	SEM 11.2 Determine the financial resources required for each activity or task for an event.
Two Skill/Concept	SEM 11.3 Discuss the need for security and emergency plans.
One Recall	SEM 11.4 Describe the types of indoor and outdoor security.
Three Strategic Thinking	SEM 11.5 Analyze the security and safety needs of a venue.
Two Skill/Concept	SEM 11.6 Design a sports or entertainment event, including a marketing plan and budget.
Three Strategic Thinking	SEM 11.7 Create evaluation metrics to determine success and discuss changes needed.

Foundational CTE Courses

Career Exploration (22151^)
Employability (22152^)
Workplace Technology Skills (10004^)
Leadership & Service (22101^)

Cluster Courses

MS Robotics (21049)
Exploring STEM in CTE (21050)
PLTW MS Engineering (21000)
Introduction to Technology Education (21051)

Pathway Courses

Aviation Pathway	Engineering Pathway		Computer Science Pathway	Robotics Pathway	Energy Pathway
Fundamentals of Aviation (20052)	Introduction to Engineering (21001)	Electronics (17106)	Computer Programming (10152^)	Electronics (17106)	Electronics (17106)
Aviation I (20053)	Introduction to Manufacturing (13001)		Adv. Computer Programming (10153)	Engineering Design & Development (21007)	Engineering Design & Development (21007)
Aviation II (20054)	Drafting & Design I (21102)		Computer Science Essentials (10013)	Computer Programming (10152^)	Introduction to Energy/Power (20101)
	Drafting & Design II – Architectural (21103)		Computer Science Principles (10015)	Adv. Computer Programming (10153)	
PLTW Engineering:	Mechanical Drafting & Design (21106)	PLTW Engineering:	PLTW Computer Science:	Robotics (21009)	Alternate Energy Systems (21060)
Aerospace Engineering (21019)	Bioprocess Engineering (21014)	Intro to Engineering & Design (21017)	PLTW - Computer Science Essentials (10013)		
		Principles of Engineering (21018)	PLTW Computer Science Principles (10015)		
		Civil Engineering & Architecture (21021)			
		Digital Electronics (21023)			

Dual Credit Courses

Visit <https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf> for a full list of dual credit courses in the Science, Technology Engineering & Mathematics Career Cluster.

Academic CTE Courses

Physical Science (03159^)	Biology (03051^)	Biology-Advanced Studies (03052)	Chemistry (03101^)
Geometry (02072^)	Trigonometry (02103^)	Calculus (02121)	Physics (03151^)

Capstone CTE Courses

Entrepreneurship Experience (80026)	Senior Experience (80019^)	Youth Apprenticeship (80020)	Service Learning (22104)	Youth Internships (80018^)
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^Denotes course is available on the SD Virtual School (<http://www.sdvs.k12.sd.us/>)

Introduction to Engineering

Career Cluster	STEM
Course Code	21001
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundation courses – cluster course – Introduction to Engineering – specialized pathway course – capstone experience
Student Organization	None
Coordinating Work-Based Learning	Industry, guest speakers, field trips
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; 7-12 Technology Education Endorsement
Resources	O*NET - https://www.onetonline.org/ Brinell Hardness Test Methods - www.hardnesstesters.com › Applications National Society of Professional Engineers – https:// www.nspe.org

Course Description:

The Introduction to Engineering course is designed to provide a foundation in engineering for students in South Dakota. Students are engaged in an instructional program that integrates academics and technical preparation and focuses on career awareness and ethics in engineering. This course will prepare students for advanced educational opportunities. Topics addressed in Introduction to Engineering include: exploring the field of engineering, understanding materials and processes used in engineering, investigating systems used in engineering and practicing effective communication.

Program of Study Application: This is a pathway course in the STEM cluster Engineering pathway. It is recommended that the course be preceded by a series of foundation courses and a cluster course in STEM, and followed by a more specialized pathway course such as Industrial and Bioprocess Engineering, Mechanical Drafting & Design or Architectural Drafting.

Course Standards

Indicator # IE 1 Examine the fields of engineering		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	IE 1.1 Examine the evolution of engineering	
Level 1: Recall	IE 1.2 Identify types of engineers	
Level 1: Recall	IE 1.3 Describe the engineering team	

Indicator # IE 2 Investigate various engineering systems		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	IE 2.1 Identify various types of engineering systems	
Level 2: Skill/Concept	IE 2.2 Apply the engineering design process to solve problems	

Indicator # IE 3 Apply the engineering process to a product		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	IE 3.1 Design a product	
Level 2: Skill/Concept	IE 3.2 Create a three-dimensional (3-D) model	
Level 2: Skill/Concept; Level 3: Strategic Thinking	IE 3.3 Use the engineering design process to build and test a prototype	

Level 2: Skill/Concept; Level 4: Extended Thinking	IE 3.4 Utilize a systems approach to produce a final product	
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Indicator # IE 4 Demonstrate effective communication		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept; Level 3: Strategic Thinking	IE 4.1 Demonstrate effective oral communication	
Level 3: Strategic Thinking; Level 4: Extended Thinking	IE 4.2 Demonstrate effective written communication	
Level 4: Extended Thinking	IE 4.3 Demonstrate effective graphic communication	

Indicator # IE 5 Examine testing procedures used on materials in engineering		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	IE 5.1 Analyze materials based on their properties	
Level 3: Strategic Thinking	IE 5.2 Analyze material testing procedures	

Introduction to Energy/Power

Career Cluster	STEM
Course Code	20101
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundation courses – cluster course – Introduction to Energy/Power – specialized pathway course – capstone experience
Student Organization	None
Coordinating Work-Based Learning	Community/industry speakers
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Energy Pathway Endorsement; 7-12 Technology Education Endorsement
Resources	O*Net - http://www.onetonline.org Occupational Safety and Health Administration (OSHA)- www.osha.gov

Course Description:

The Introduction to Energy and Power course is designed to provide a basic understanding of the various types of energy, how energy is obtained and the relationships among work, energy, and power. Students will also study the history and effects of energy on society, alternative power, safety and ethics.

Program of Study Application

This is a pathway course in the STEM cluster Energy pathway. It is recommended that the course be preceded by a series of foundation courses and a cluster course in STEM, and followed by a more specialized pathway course such as Alternative Energy Systems and Electronics.

Course Standards

Indicator # EP 1 Analyze the history of energy/power sources		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Content	EP 1.1 Examine the historical development of energy/power production	
Level 1: Recall	EP 1.2 Assess the impact of energy/power on the way people live and work	

Indicator #EP 2 Examine the relationships among work, energy, and power		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	EP 2.1 Define work, power, and energy	
Level 2: Skill/Concept	EP 2.2 Examine the relationship between power and energy sources	

Indicator # EP 3 Understand the transmission of energy and power		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	EP 3.1 Understand how a mechanical system operates	
Level 2: Skill/Concept	EP 3.2 Understand the types of simple machines	
Level 2: Skill/Concept	EP 3.3 Understand both liquid and gas forms of power transmission	
Level 1: Recall	EP 3.4 Understand the laws that govern electricity	

Indicator # EP 4 Understand alternative energy		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	EP 4.1 Understand the sources of alternative energy	
Level 3: Strategic Thinking	EP 4.2 Analyze the sources of alternative energy	

Indicator # EP 5 Implement safety with power technology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	EP 5.1 Examine safety issues relating to mechanical systems	
Level 2: Skill/Concept	EP 5.2 Employ safety practices with fluids	
Level 1: Recall	EP 5.3 Identify fire classification and extinguishers	
Level 2: Skill/Concept	EP 5.4 Employ safety practices with electricity	

Indicator # EP 6 Understand scientific concepts for energy and power technology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	EP 6.1 Understand how energy converts from one form to another	
Level 2: Skill/Concept	EP 6.2 Understand the categories of energy	
Level 3: Strategic Thinking	EP 6.3 Understand that an engine performing work exhausts thermal energy that cannot be retrieved to the surroundings	
Level 3: Strategic Thinking	EP 6.4 Understand which energy sources can be renewable and non-renewable	

Career Cluster: STEM

Course: Introduction to Energy/Power

Indicator # EP 7 Explore energy and power career options		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	EP 7.1 Research career opportunities in energy and power fields	

Introduction to Technology Education

Career Cluster	STEM
Course Code	21051
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational course
Student Organization	None
Coordinating Work-Based Learning	Field trips
Industry Certifications	None
Dual Credit or Dual Enrollment	None
Teacher Certification	Architecture & Construction Cluster Endorsement; Manufacturing Cluster Endorsement; STEM Cluster Endorsement; Transportation, Distribution & Logistics Cluster Endorsement; 7-12 Technology Education Endorsement
Resources	http://www.iste.org/standards/ISTE-standards/standards-for-students ; www.google.com/earth

Course Description: Technology is a significant part of society. Most careers call for some type of technology skills, knowledge, and abilities. Technology education brings deeper meaning to core content concepts while introducing students to various technologies, technical skills, critical thinking processes, and hands-on experiences. Students will increase their technological literacy, problem solving, and creative/critical thinking skills. Within this course the following topics of study will be addressed: nature of technology, technology and society, design process, energy and power, manufacturing, construction, transportation, communication, professionalism, health, safety and the environment.

Program of Study Application- This is a STEM Cluster Course in the STEM Engineering Pathway. It is recommended that the course be preceded by a series of foundation courses and a cluster course(s) in STEM, and followed by a more specialized pathway course such as Industrial and Bioprocess Engineering, Mechanical Drafting & Design, Architectural Drafting, and/or Robotics.

Note: Each standard has been addressed at four Webb levels. This differentiation may be used to determine appropriateness for grade level use or progression of learning.

Course Standards

Indicator # ITE 1 Analyze the scope and nature of technology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ITE 1.1 Examine the relationship between technology and other areas of study	
Level 2: Skill/Concept	ITE 1.2. Understand the effects of technology on the natural environment	
Level 2: Skill/Concept	ITE 1.3. Examine the relationship between the cultural, social, economic, and political effects of technology on society	
Indicator # ITE 2 Apply the system-thinking model (the feedback loop) to technology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ITE 2.1 Apply the design process to the engineering design process	
Indicator # ITE 3 Solve problems using innovation, research, experimentation, and design		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	ITE 3.1 Use research and experimentation methods to solve problems	

Level 3: Strategic Thinking	ITE 3.2. Use innovative and/or troubleshooting methods to solve problems	
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Indicator # ITE 4 Apply appropriate skill sets to various ranges of technology

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	ITE 4.1. Understand biotechnologies	
Level 2: Skill/Concept	ITE 4.2 Understand energy and power technologies	
Level 2: Skill/Concept	ITE 4.3 Understand information and communication technologies	
Level 2: Skill/Concept	ITE 4.4 Understand transportation technologies	
Level 2: Skill/Concept	ITE 4.5 Understand manufacturing technologies and materials	
Level 2: Skill/Concept	ITE 4.6 Understand construction technologies	

Indicator # ITE 5 Understand ethics and professionalism in technology

<i>Webb Level</i>	<i>Sub-indicator</i>	
Level 3: Strategic Thinking	ITE 5.1 Investigate and demonstrate understanding of professionalism and ethics in the technological environment	

Indicator # ITE 6 Understand safety and health in technology

<i>Webb Level</i>	<i>Sub-indicator</i>	
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Career Cluster: STEM

Course: Introduction to Technology Education

Level 2: Skill/Concept	ITE 6.1. Understand implication of health and public safety standards	
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Alternative Energy Systems

Career Cluster	STEM
Course Code	21060
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational Courses, Cluster Courses, Pathway Courses, Capstone Experience
Student Organization	None
Coordinating Work-Based Learning	None
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Energy Pathway Endorsement; 7-12 Technology Education Endorsement
Resources	Teaching Renewable Energy: http://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_energy/renewablesready_fullreport.pdf National Renewable Energy Laboratory: http://www.nrel.gov/docs/gen/fy01/30927.pdf http://www.nrel.gov/education/educational_resources.html

Course Description:

This course serves as an introductory course in alternative energy. This is a survey of wind, biomass, solar, geothermal, and other non-traditional energy sources.

Program of Study Application

This is a STEM Pathway Course for the Energy Pathway, preceded by a Foundational Course(s) and a Cluster Course(s).

Career Cluster: STEM

Course: Alternative Energy

Course Standards

Indicator # AES 1 Understand the historical development of alternative energy systems		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AES 1.1 Understand the historical background of alternative energy generation	
Level 3: Strategic Thinking	AES 1.2 Analyze the role of society in the use of energy generation	
Level 4: Extended Thinking	AES 1.3 Analyze the cultural, socioeconomic and political effects of alternative energy technologies	
Level 3: Strategic Thinking	AES 1.4 Understand the environmental impact of energy production and consumption	

Indicator # AES 2 Understand the types of major energy systems		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AES 2.1 Analyze the characteristics of wind energy generation systems	
Level 4: Extended Thinking	AES 2.2 Analyze the characteristics biomass energy generation systems	
Level 4: Extended Thinking	AES 2.3 Analyze the characteristics of solar energy generation systems	
Level 4: Extended Thinking	AES 2.4 Analyze the characteristics of geothermal energy generation systems	

Career Cluster: STEM

Course: Alternative Energy

Level 2: Skill/Concept	AES 2.5 Analyze the characteristics of traditional energy generation systems	
Level 4: Extended Thinking	AES 2.6 Model an alternative energy system	

Indicator # AES 3 Research alternative energy careers and trends in energy development		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AES 3.1 Identify careers in alternative energy	
Level 1: Recall	AES3.2 Identify future energy resources	

Aviation Careers I

Career Cluster	STEM
Course Code	
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundation Courses, Cluster Courses, Pathway Courses, Capstone Experiences
Student Organization	Skills USA
Coordinating Work-Based Learning	local airports, Fixed Base Operators, National Guard, Civil Air Patrol, Experimental Aircraft Association
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Aviation Pathway Endorsement; 7-12 Technology Education Endorsement
Resources	https://www.faa.gov/education/ https://www.faa.gov/education/educator_resources/curriculum/high_school/ https://www.osha.gov/SLTC/airline_industry/ https://youcanfly.aopa.org/high-school/high-school-curriculum https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/

Course Description: This course provides students with the first step towards a Private Pilot's license or Part 107 - Drone Certification. Students will learn basic history of aviation, aircraft type/design, air density, forces of flight, propulsion, airframes, avionics/flight instruments, possible career paths within the aviation industry, and Federal Aviation Agency regulations.

Program of Study Application

Aviation is a pathway course in the aviation pathway. Students in this pathway would generally complete foundation courses and one of the STEM cluster courses prior to participating in aviation.

Career Cluster: STEM

Course: Aviation I

Course Standards

Indicator # AVC-1 1 Identify events in the history of flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AVC-1 1.1 Identify flight in the ancient world	
Level 2: Skill/Concept	AVC-1 1.2 Identify the development of flight in the early 1900s through today and beyond	

Indicator # AVC-1 2 Investigate the principles of flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-1 2.1 Investigate the basic parts and control surfaces on aircraft	
Level 3: Strategic Thinking	AVC-1 2.2 Investigate the 4 forces of flight	
Level 4: Extended Thinking	AVC-1 2.3 Investigate basic aerodynamics	
Level 3: Strategic Thinking	AVC-1 2.4 Investigate airplane stability	

Indicator # AVC-1 3 Understand the flight environment		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AVC-1 3.1 Comprehend air safety	

Career Cluster: STEM

Course: Aviation I

Level 2: Skill/Concept	AVC-1 3.2 Comprehend the airport layout, inclusive of safety elements	
Level 3: Strategic Thinking	AVC-1 3.3 Comprehend airspace control	
Level 2: Skill/Concept	AVC-1 3.4 Comprehend radio communications	

Indicator # AVC-1 4 Understand aircraft systems and performance		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AVC-1 4.1 Know the basic aircraft instruments	
Level 2: Skill/Concept	AVC-1 4.2 Know aircraft types and systems	
Level 3: Strategic Thinking	AVC-1 4.3 Predict aircraft performance	
Level 3: Strategic Thinking	AVC-1 4.4 Calculate weight and balance	

Indicator # AVC-1 5 Explore the multiple careers in aviation		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AVC-1 5.1 Investigate aviation career fields and occupations	

Aviation Careers II

Career Cluster	STEM
Course Code	20053
Prerequisite(s)	Aviation Careers 1
Credit	.5 or 1
Program of Study and Sequence	Foundation Courses, Cluster Courses, Pathway Courses, Capstone Experiences
Student Organization	Skills USA
Coordinating Work-Based Learning	local airports, Fixed Base Operators, National Guard, Civil Air Patrol, Experimental Aircraft Association
Industry Certifications	Private Pilot or Part 107 - Drone Certifications
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Aviation Pathway Endorsement; 7-12 Technology Education Endorsement
Resources	https://www.faa.gov/education/ https://www.faa.gov/education/educator_resources/curriculum/high_school/ https://www.osha.gov/SLTC/airline_industry/ https://youcanfly.aopa.org/high-school/high-school-curriculum https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/

Course Description: This course provides students with the final step towards a Private Pilot's license or Part 107 - Drone Certification. Students will learn about the flight environment, weather in aviation, airports, navigation/aeronautical charts, aircraft performance, flight medical issues, possible career paths within the aviation industry, and Federal Aviation Agency regulations.

Program of Study Application

Aviation is a pathway course in the aviation pathway. Students in this pathway would generally complete foundation courses and one of the STEM cluster courses prior to participating in aviation.

Course Standards

Indicator # AVC-2 1 Applying the principles of flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 1.1 Utilize the parts and control surfaces on an aircraft in flight	
Level 3: Strategic Thinking	AVC-2 1.2 Utilize the four forces of flight	
Level 4: Extended Thinking	AVC-2 1.3 Utilize aerodynamics in flight	
Level 3: Strategic Thinking	AVC-2 1.4 Implement airplane stability while in flight	

Indicator # AVC-2 2 Operating in a safe flight environment		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 2.1 Practice air safety	
Level 3: Strategic Thinking	AVC-2 2.2 Implement proper procedures at the airport	
Level 4: Extended Thinking	AVC-2 2.3 Practice working in different airspaces	
Level 3: Strategic Thinking	AVC-2 2.4 Implementing proper radio communications	

Indicator # AVC-2 3 Utilizing aircraft systems and performance		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 3.1 Implement proper use of aircraft instruments	
Level 3: Strategic Thinking	AVC-2 3.2 Implement proper use of aircraft systems	
Level 3: Strategic Thinking	AVC-2 3.3 Evaluate and respond to aircraft performance during flight	
Level 3: Strategic Thinking	AVC-2 3.4 Calculate weight and balance	

Indicator # AVC-2 4 Utilize the relationships between weather and flight for safety		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 4.1 Apply basic weather theory to flights	
Level 2: Skill/Concept	AVC-2 4.2 Describe weather patterns and clouds	
Level 3: Strategic Thinking	AVC-2 4.3 Assess weather hazards	
Level 3: Strategic Thinking	AVC-2 4.4 Interpret weather data	
Level 3: Strategic Thinking	AVC-2 4.5 Utilize sources of weather information	

Career Cluster: STEM

Course: Aviation Careers II

Indicator # AVC-2 5 Implement navigation in flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 5.1 Implement proper navigation skills	
Level 3: Strategic Thinking	AVC-2 5.2 Utilize dead-reckoning and pilotage	
Level 3: Strategic Thinking	AVC-2 5.3 Utilize a flight computer	
Level 3: Strategic Thinking	AVC-2 5.4 Utilize aeronautical charts	
Level 3: Strategic Thinking	AVC-2 2.4 Implementing proper radio communications	

Indicator # AVC-2 6 Understand aviation physiology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 6.1 Examine and understand the effect on the body in the flight environment.	

Career Cluster: STEM

Course: Aviation Careers II

Indicator # AVC-2 7 Understand FAA Regulations and Required Flight Paperwork		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 7.1 Examine and understand the current FAA regulations for flight	
Level 3: Strategic Thinking	AVC-2 7.2 Utilizing flight paperwork	

Indicator # AVC-2 8 Explore the multiple careers in aviation		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AVC-2 8.1 Investigate aviation career fields and occupations.	

Bioprocess Engineering

Career Cluster	STEM
Course Code	21014
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational course, cluster course, and career pathway course
Student Organization	None
Coordinating Work-Based Learning	None
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Agriculture, Food & Natural Resources Cluster Endorsement; Food Products & Processing Pathway Endorsement; Natural Resources & Environmental Service Pathway Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; 9-12 Engineering Endorsement; 7-12 Technology Education Endorsement
Resources	http://www.iseek.org/careers/viewCareers?id=15

Course Description: This course is designed to provide information on broad application of ever-emerging field of bioprocessing for students in South Dakota. Students are engaged in an instructional program that integrates academics and technical preparation and focuses on career awareness in bioprocess engineering. This course will prepare students for advanced opportunities that lie in the area of biotechnological advancement. The student will apply the knowledge of engineering and biological sciences to design and develop a process capable of ameliorating environmental pollution, producing valuable products and applying novel technologies to produce alternative sources of transportation fuel. Topics that will be covered in this course include: water and wastewater treatment plants, recycling and reuse, and fermentation processes.

Program of Study Application: This is a pathway course in the STEM cluster engineering pathway. It is recommended that the course be preceded by a series of foundation courses, a cluster course in STEM and more specialized pathway courses such as Introduction

to Engineering, Engineering Design and Development, and Introduction to Manufacturing and followed by dual credit course and/or capstone course.

Course Standards

Indicator # BE 1 Understand the basic concepts of bioprocess system and biotechnological processes		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall; Level 2: Thinking	BE 1.1 Identify bio-based products	
Level 1: Recall and Understand	BE 1.2 Identify microbial processes that can be implemented in bioprocessing	
Level 2: Understand and Demonstrate	BE 1.3 Understand how biotechnology can be integrated with engineering	

Indicator # BE 2 Apply basic knowledge of biological science and engineering in developing products		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall; Level 2: Thinking Explain	BE 2.1 Understand how raw materials are used for developing products	
Level 1: Recall; Level 2: Thinking Explain	BE 2.2 Understand how the chemical composition of a raw material affects the design process and product outcome	

Indicator # BE 3 Understand issues associated with implementation and operation of biotechnological processes		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>

Level 3: Strategic thinking	BE 3.1 Analyze problems associated with bioprocessing, for example, environmental, technical, sustainable	
Level 2: Thinking Explain	BE 3.2 Understand how to operate a bioreactor	

Indicator # BE 4 Career exploration in bioprocess engineering		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic thinking	BE 4.1 Explore the role of bioprocess engineering in an agriculture related area	
Level 2: Thinking Explain	BE 4.2 Understand the role of bioprocess engineering in food processing	
Level 2: Thinking Explain	BE 4.3 Understand how bioprocess engineering is critical to water and wastewater treatment technologies	
Level 2: Thinking Explain	BE 4.4 Understand how bioprocess engineering can improve the rural economy	

Indicator # BE 5 Understand safety and health in bioprocessing engineering		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall; Level 2: Thinking Explain	BE 5.1 Understand implications of health and public safety standards.	

Indicator # BE 6 Understand workplace ethics and professionalism in bioprocess engineering		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>

Level 1: Recall; Level 2: Skill Concept	BE 6.1 Investigate and demonstrate understanding of professionalism and workplace ethics in the technological environment.	
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Electronics

Career Cluster	STEM
Course Code	17106
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundation courses – cluster course – Introduction to Energy/Power – specialized pathway course – capstone experience
Student Organization	None
Coordinating Work-Based Learning	Field trips/tours, guest speakers
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; Manufacturing Cluster Endorsement; Arts, AV Technology & Communications Cluster Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Electronics Endorsement; 7-12 Technology Education Endorsement
Resources	Occupational Safety and Health Administration (OSHA)- http://www.osha.gov Institute of Electrical and Electronics Engineers – https://www.IEEE.org

Course Description:

The Introduction to Electronics course is designed to provide a basic understanding electronics which include how to design and create components, diagnose, troubleshoot and repair electronic components. Through classroom study and hands-on experience, students prepare for work within the electronics field using current technology, safety and ethical procedures.

Program of Study Application

This is a pathway course in the STEM cluster Electronics pathway. It is recommended that the course be preceded by a series of foundation courses and a cluster course in STEM, and followed by a more specialized pathway course such as Robotics.

Course Standards

Indicator # E 1 Determine general technical literacy skills		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	E 1.1 Employ appropriate units and abbreviations in electronics	
Level 2: Skill/Concept	E 1.2 Determine unknown values in multiple types of electronic circuits	
Level 1: Recall	E 1.3 Identify proper terminology in electronics	

Indicator # E 2 Demonstrate proficiency in electronic safety		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	E 2.1. Determine physiological responses to electrical shock	
Level 1: Recall	E 2.2. Demonstrate proper safety procedures in the use of soldering and electronics testing equipment	

Indicator # E 3 Demonstrate proficiency in circuit assembly		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	E 3.1. Construct a circuit using schematic symbols for identified components	

Level 2: Skill/Concept	E 3.2. Construct circuit boards using correct soldering principles and techniques	
Level 3: Strategic Thinking	E 3.3. Determine cause of non-operational circuits	

Indicator # E 4 Determine proper use of electronic test equipment

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	E 4.1. Measure resistance, voltage, and current in circuits	
Level 1: Recall	E 4.2. Classify equipment for signal analysis	

Indicator # E 5 Troubleshoot circuits for proper operation

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	E 5.1. Calculate voltage, current, and power solutions in circuits	
Level 2: Skill/Concept	E 5.2. Troubleshoot solutions to analyze circuit operation	

Indicator # E 6 Explore electronics career options

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	E 6.1 Research career opportunities in electronics fields	
Level 1: Recall	E 6.2 Explore career outlook for robotic applications	

Engineering Design and Development

Career Cluster	STEM
Course Code	21007
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Engineering Pathway, Energy Pathway, and Robotics Pathway.
Student Organization	None
Coordinating Work-Based Learning	Interviewing industry professionals, guest speakers, tours, field trips
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; 9-12 Engineering Endorsement; 7-12 Technology Education
Resources	Community members, industry professionals

Course Description:

Engineering Design and Development is a pathway course in the STEM Engineering Pathway, STEM Energy Pathway, and STEM Robotics Pathway. Students are engaged in an instructional program that integrates academics, problem solving, communication, and technical preparation and focuses on career awareness. This course is designed to provide the student with an engaging opportunity to research, design, innovate and develop technological artifacts (products). This course will prepare students for direct entry into a career, advanced educational opportunities, and lifelong learning.

Program of Study Application

This is a pathway course in the STEM cluster Energy pathway. It is recommended that the course be preceded by a series of foundation courses and a cluster course in STEM, and followed by a more specialized pathway course such as Engineering, Energy and Robotics.

Course Standards

Indicator # EDD 1 Utilize the engineering design process to identify a technologically related problem		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	EDD 1.1 Examine current state of a problem	
Level 3: Strategic Thinking	EDD 1.2 Research solution options to solve problem	
Level 3: Strategic Thinking	EDD 1.3 Propose new solutions to solve problem	
Level 4: Extended Thinking	EDD 1.4 Identify the best solution	

Indicator # EDD 2 Utilize the engineering design process to construct a prototype of the solution to problem		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	EDD 2.1 Construct a prototype to model solution	
Level 4: Extended Thinking	EDD 2.2 Test prototype for effectiveness	

Indicator # EDD 3 Utilize the engineering design process to analyze test data results for prototype performance		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>

Level 4: Extended Thinking	EDD 3.1 Analyze test results	
Level 3: Strategic Thinking	EDD 3.2 Make decisions based on test result data	
Level 4: Extended Thinking	EDD 3.3 Redesign the product to meet performance needs	

Indicator # EDD 4 Communicate solution(s) and the prototype for others		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4: Extended Thinking	EDD 4.1 Communicate solutions for product	

Exploring STEM in CTE

Career Cluster	STEM
Course Code	21050
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Cluster course for Middle or High school.
Student Organization	None
Coordinating Work-Based Learning	field trips
Industry Certifications	None
Dual Credit or Dual Enrollment	None
Teacher Certification	Architecture & Construction Cluster Endorsement; STEM Cluster Endorsement; 7-12 Technology Education Endorsement
Resources	https://Vimeo.com/67277269

Course Description: This course serves as an introduction to Science, Technology, Engineering and Mathematics (STEM) with primary areas of focus on aviation, energy, engineering, and robotics. It will provide a basic background to allow students to identify interests which may assist students in pathway and course selection at the secondary level.

Program of Study Application

This is a STEM Cluster Course in the STEM Engineering Pathway. It is recommended that the course be preceded by a series of foundation courses followed by additional cluster courses and more specialized pathway courses at the secondary level. These pathways may include courses related to Robotics, Energy, Engineering and Aviation. This course can be taught at the middle or high school level.

Course Standards**Indicator # STEM 1 Understand the components of STEM in CTE**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	STEM 1.1 Understand the components of STEM in CTE and the impact of STEM on society	
Level 3: Strategic Thinking	STEM 1.2 Explore the impact of STEM in CTE related careers	

Indicator # STEM 2 Understand how Science relates to STEM in CTE

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	STEM 2.1 Understand scientific terminology as it applies to STEM in CTE	
Level 2: Skill/Concept	STEM 2.2 Apply scientific concepts as they relate to STEM in CTE	

Indicator # STEM 3 Understand how Technology relates to STEM in CTE

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	STEM 3.1 Understand technology terminology as it applies to STEM in CTE	
Level 2: Skill/Concept	STEM 3.2 Apply technology concepts as they relate to STEM in CTE	

Indicator # STEM 4 Understand how Engineering relates to STEM in CTE

<i>Webb Level</i>	<i>Sub-indicator</i>	

Level 1: Recall	STEM 4.1 Understand engineering terminology as it applies to STEM in CTE	
Level 2: Skill/Concept	STEM 4.2 Apply engineering concepts as they relate to STEM in CTE	

Indicator # STEM 5 Understand how Mathematics relates to STEM in CTE

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	STEM 5.1 Understand mathematical terminology as it applies to STEM in CTE	
Level 2: Skill/ Concept	STEM 5.2 Apply mathematical concepts as they relate to STEM in CTE	
Level 2: Skill/Concept	STEM 5.3 Understand and apply measurement tools and practices	

Indicator # STEM 6 Understand how technical and soft skills apply to STEM and CTE careers.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/ Concept	STEM 6.1 Explore technical skills required for STEM and CTE careers	
Level 2: Skill/ Concept	STEM 6.2 Explore soft skills required for STEM and CTE careers	
Level 2: Skill/ Concept	STEM 6.3 Explore health standards and safety skills in relation to STEM in CTE careers	

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Fundamentals of Aviation

Career Cluster	STEM
Course Code	20052
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	This course is in the Aviation Pathway and is the first of three courses in the pathway. After completing this course, students could take Aviation 1 and/or Aviation II
Student Organization	Skills USA
Coordinating Work-Based Learning	local airports, air traffic controllers, aerial applicators
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	STEM Cluster Endorsement; Aviation Pathway Endorsement
Resources	https://www.faa.gov/education/ https://www.faa.gov/education/educator_resources/curriculum/high_school/ https://www.osha.gov/SLTC/airline_industry/

Course Description: This course provides students with an understanding of the science of flight and the history, regulations, and possible career paths within the aviation industry. It also covers the relationships of weight and balance, principles of navigation and flight control, ground and airport operations and services, and Federal Aviation Agency regulations.

Program of Study Application

Aviation is a pathway course in the aviation pathway. Students in this pathway would generally complete foundation courses and one of the STEM cluster courses prior to participating in aviation. After the completion of this course, students could take Aviation I and/or Aviation II.

Course Standards

Indicator # AV-F 1 Identify events in the history of flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 1.1 Identify flight in the ancient world	
Level 2: Skill/Concept	AV-F 1.2 Identify the development of flight in the early 1900s	
Level 2: Skill/Concept	AV-F 1.3 Identify the development of flight during the Golden Age of Flight (1918 to 1939)	
Level 2: Skill/Concept	AV-F 1.4 Identify the development of flight innovation during World War II (1939 to 1945)	
Level 2: Skill/Concept	AV-F 1.5 Identify the development of flight innovation during the Cold War (1945 to 1991)	
Level 2: Skill/Concept	AV-F 1.6 Identify the development of flight innovation (1991 to present)	
Level 3: Strategic Thinking	AV-F 1.7 Analyze current trends in flight	

Indicator # AV-F 2 Investigate the principles of flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3: Strategic Thinking	AV-F 2.1 Investigate the basic parts and control surfaces on aircraft and drones	
Level 3: Strategic Thinking	AV-F 2.2 Investigate the four forces of flight	
Level 4: Extended Thinking	AV-F 2.3 Investigate basic aerodynamics	

Career Cluster: STEM

Course: Fundamentals of Aviation

Level 3: Strategic Thinking	AV-F 2.4 Investigate airplane and drone stability	
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Indicator # AV-F 3 Understand the flight environment		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 3.1 Comprehend air safety	
Level 2: Skill/Concept	AV-F 3.2 Comprehend the airport layout, inclusive of safety elements	
Level 3: Strategic Thinking	AV-F 3.3 Comprehend airspace control	
Level 2: Skill/Concept	AV-F 3.4 Comprehend radio communications	

Indicator # AV-F 4 Understand aircraft and drone systems and performance		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 4.1 Know the basic aircraft instruments	
Level 2: Skill/Concept	AV-F 4.2 Know aircraft or drone systems	
Level 3: Strategic Thinking	AV-F 4.3 Predict aircraft or drone performance	
Level 3: Strategic Thinking	AV-F 4.4 Calculate weight and balance	

Indicator # AV-F 5 Understand the relationships between weather and flight		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 5.1 Explain basic weather theory	
Level 2: Skill/Concept	AV-F 5.2 Describe weather patterns and clouds	
Level 2: Skill/Concept	AV-F 5.3 Explain weather hazards	

Career Cluster: STEM

Course: Fundamentals of Aviation

Level 3: Strategic Thinking	AV-F 5.4 Interpret weather data	
Level 2: Skill/Concept	AV-F 5.5 Identify sources of weather information	

Indicator # AV-F 6 Understand navigation in aviation		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	AV-F 6.1. Understand basic navigation	
Level 1: Recall	AV-F 6.2 Understand dead-reckoning and pilotage	
Level 2: Skill/Concept	AV-F 6.3 Utilize a flight computer or GPS programming and tracking	
Level 3: Strategic Thinking	AV-F 6.4 Utilize aeronautical charts	

Indicator # AV-F 7 Understanding drone technology		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 7.1 Understand key concepts affecting safe flight of a drone	
Level 2: Skill/Concept	AV-F 7.2 Understand basic drone theory and flight	
Level 2: Skill/Concept	AV-F 7.3 Understand maintenance of drones	

Indicator # AV-F 8 Explore the multiple careers in aviation		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	AV-F 8.1 Investigate aviation career fields and occupations.	

Middle School Robotics

Career Cluster	STEM
Course Code	21049
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational Courses, Cluster Courses, Pathway Courses, Capstone Experience
Student Organization	VEX Robotics, BEST Robotics, FIRST Lego League and FIRST Tech Challenge
Coordinating Work-Based Learning	tours of local businesses with robotics virtual tours of industrial robots http://highered.mheducation.com/sites/dl/free/0078308291/223250/robot.html
Industry Certifications	None
Dual Credit or Dual Enrollment	None
Teacher Certification	STEM Cluster Endorsement; 7-12 Technology Education Endorsement
Resources	

Course Description:

Middle School Robotics course allows students to develop an understanding of how robots function, their applications, and how to program them to perform specified tasks.

Program of Study Application

This course is a STEM Cluster course, which may be followed by the STEM Pathway course of Mechatronics/Robotics, followed by a Senior Capstone course.

Career Cluster: STEM

Course: Middle School Robotics

Course Standards

Indicator # MSMR 1 Understand the components that make up a robot

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	MSMR 1.1. Know the equipment used in robotics.	
Two Skill/Concept	MSMR 1.2. Identify various mechanical systems used in robotics	
Three Strategic Thinking	MSMR 1.3. Demonstrate the use of programming commands	

Indicator # MSMR 2 Investigate the impact of robotics on our society

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	MSMR 2.1. Compare and contrast robotics labor vs. human labor	
Two Skill/Concept	MSMR 2.2. Explore career outlook for robotic applications	
Two Skill/Concept	MSMR 2.3. Explore new entrepreneurial opportunities using robotics	

Career Cluster: STEM

Course: Middle School Robotics

Indicator # MSMR 3 Design a robot to solve a particular problem

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	MSMR 3.1. Identify robotic application	
Four Extended thinking	MSMR 3.2. Propose a robotic design	
Four Extended thinking	MSMR 3.3. Construct a functional robot.	
Four Extended thinking	MSMR 3.4. Program a robot to perform a specific task.	
Four Extended thinking	MSMR 3.5. Evaluate robot programming	

Robotics

Career Cluster	STEM
Course Code	21009
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational Courses, Cluster Courses, Pathway Courses, Capstone Experience
Student Organization	None
Coordinating Work-Based Learning	industry tours of local businesses utilizing robotic systems
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Programming & Software Development Pathway Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement; 7-12 Technology Education Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	BEST Robotics: http://www.bestinc.org/ FIRST Tech Challenge: http://www.usfirst.org/roboticsprograms/ftc STEM Robotics 101: http://stemrobotics.cs.pdx.edu/node/190?root=291 Career Research: www.sdmylife.com and http://www.onetonline.org

Course Description:

This robotics course emphasizes the design, building, operation, application, and documentation of robotic systems. Students follow the engineering design process, apply basic programming skills, and explore how robots and automated systems are used in industry.

Students will have an understanding of the historical and current uses of robots and automated systems; programmable circuits, interfacing both inputs and outputs; proficient ethical standards for engineering and technology professions; and testing of robots.

Career Cluster: STEM

Course: Robotics

Program of Study Application

This is a STEM Pathway Course for the Robotics Pathway, preceded by a Foundational Course(s) and a Cluster Course(s).

Course Standards

Indicator # RBT 1 Identify components of a robotic system		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	RBT 1.1 Describe the parts necessary to make a robot	
Level 2: Skill/ Concept	RBT 1.2 Examine the relationships among the subsystems	

Indicator # RBT 2 Understand safety procedures and ethical issues inherent to robotics		
<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/ Concept	RBT 2.1. Demonstrate proper safety procedures	
Level 2: Skill/ Concept	RBT 2.2. Determine how to apply OSHA Compliant Lockout – Tag-out procedures	
Level 2: Skill/ Concept	RBT 2.3. Examine current ethical issues	

Indicator # RBT 3 Construct, analyze and troubleshoot circuits		
<i>Webb Level</i>	<i>Sub-indicator</i>	
Level 3: Strategic thinking	RBT 3.1. Build circuit according to schematic diagram	
Level 3: Strategic thinking	RBT 3.2. Calculate circuit parameters	

Career Cluster: STEM

Course: Robotics

Level 3: Strategic thinking	RBT 3.3. Measure circuits parameters	
Level 3: Strategic thinking	RBT 3.4. Compare calculated and measured solutions to analyze circuit operation	

Indicator # RBT 4 Design, build and analyze a robotic system		
<i>Webb Level</i>	<i>Sub-indicator</i>	
Level 3: Strategic thinking	RBT 4.1 Using the design process, design, build and program a robot to perform a specified task	
Level 3: Strategic thinking	RBT 4.2 Test and modify the robot for any flaws in hardware or bugs in software components	
Level 3: Strategic thinking	RBT 4.3 Write a technical report evaluating the system performance	

Indicator # RBT 5 Research career opportunities and industry applications		
<i>Webb Level</i>	<i>Sub-indicator</i>	
Level 1: Recall	RBT 5.1 Explore career opportunities in the robotics field	
Level 3: Strategic Thinking	RBT 5.2 Investigate commercial application of robotic systems	

Foundational CTE Courses

Career Exploration (22151) Employability (22152) Entrepreneurship (12053) Workplace Technology Skills (10004) Leadership & Service (22101)

Cluster Courses

Intro to Technology Education (21051) Maintenance & Light Repair (20104) Small Engine Mechanics (20110) Powersports (20111)
Introduction to Vehicle Systems & Maintenance (20106)

Pathway Courses

Automotive Technology

Automotive Engine Repair & Performance (20121)
Automatic Transmission & Transaxle & Suspension & Steering
(20123)
Brakes/Manual Drivetrain & Axles (20122)
Electrical/Electronic Systems & HVAC (20105)

Diesel Technology

Automotive Engine Repair & Performance (20121)
Diesel Technology (20107)

Autobody Technology

Introduction to Auto Body & Estimating (20124)
Non-Structural Analysis & Damage Repair (20115)
Structural Analysis & Damage Repair (20117)
Auto Body Painting & Refinishing (20116)

Dual Credit Courses

Visit www.sdmylife.com for a full list of dual credit courses in the Transportation, Distribution & Logistics Career Cluster.

Academic CTE Courses

Geometry (02072^)
Chemistry (03101^)
Environmental Science (03003^)

Capstone CTE Courses

Entrepreneurship Experience (80026) Senior Experience (80019^)
Youth Apprenticeship (80020) Service Learning Experience (22104) Youth Internships (80018^)



Auto Body Painting and Refinishing

Career Cluster	Transportation, Distribution & Logistics
Course Code	20116
Prerequisite(s)	Intro to Auto Body and Estimating
Credit	1.0
Program of Study and Sequence	Intro to Auto Body and Estimating –Structural Analysis and Damage Repair or Nonstructural Analysis and Damage Repair – Auto Body Painting and Refinishing – Senior Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Youth Internships, Industry Guest Speakers and Industry Tours
Industry Certifications	Automotive Service Excellence (ASE) Student Certification
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement; *Autobody Technology
Resources	N/A

Course Description

Students will perform basic paint applications and final inspections to repair, where needed, and refinish vehicles. Students will comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemical/material in accordance with local, state, and federal safety and environmental regulations.

Program of Study Application

Auto Body Painting and Refinishing is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, automotive body collision and refinishing pathway.

Course Standards

PFR 1: Students will understand painting and refinishing safety precautions.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	PFR 1.1 Demonstrate auto body painting and refinishing safety practices • Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials according to federal, state, and local regulations • Identify safety and personal health hazards according to Occupational Safety and Health Administration (OSHA) guidelines and the “Right to Know Law” • Inspect spray environment and equipment to ensure compliance with federal, state, and local regulations, and for safety and cleanliness hazards • Select and use a National Institute of Occupational Safety and Health (NIOSH) approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation • Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application paint defects, and detailing (gloves, suits, hoods, eye and ear protection, etc.)

PFR 2: Students will understand surface preparation procedures.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PFR 2.1 Analyze areas for surface preparation. • Inspect and identify type of finish, surface condition and film thickness; develop and document a plan for refinishing using a total product system • Identify a complimentary color or shade of undercoat to improve coverage • Identify types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials needed, preparation and refinishing procedures • Identify metal parts to be refinished; determine material needed, preparation, and refinishing procedures
Two Skill/Concept	PFR 2.2 Prepare automotive surface to be refinished. • Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants • Inspect and identify type of finish, surface condition, and film thickness • Develop and document a plan for refinishing using a total product system • Remove paint finish as needed • Dry- or wet-sand areas to be refinished • Featheredge areas to be refinished • Apply suitable metal treatment or primer in accordance with total paint product systems • Mask and protect areas that will not be refinished • Demonstrate different masking techniques (recess/back masking, foam door type, etc.) • Mix primer, primer-surfacer and primer-sealer • Identify a complimentary color or shade of undercoat to improve coverage

	• Apply primer onto surface of repaired area • Apply two-component finishing filler to minor surface imperfections • Block sand area to which primer-surfacer has been applied • Dry-sand area to which finishing filler has been applied • Remove dust from area to be refinished, including cracks or moldings on adjacent areas • Clean area to be refinished using a final cleaning solution • Remove, with a tack rag, any dust or lint particles from the area to be refinished • Apply suitable primer sealer to the area being refinished • Scuff sand to remove nibs or imperfections from a sealer • Apply stone chip resistant coating • Restore caulking and seam sealers to repaired areas • Prepare adjacent panels for blending
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PFR 3: Students will understand spray gun and related equipment operation.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	PFR 3.1 Inspect, prepare and demonstrate usage of spray gun and related equipment. • Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment) • Select spray gun setup (fluid needle, nozzle, and cap) for product being applied • Test and adjust spray gun using fluid, air and pattern control valves • Demonstrate an understanding of the operation of pressure spray equipment

PFR 4: Students will understand and perform paint mixing, matching, and applying automotive refinishing materials to achieve invisible repair.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	PFR 4.1 Understand the process for mixing and matching automotive paint. • Identify color code by manufacturer's vehicle information label • Shake, stir, reduce, catalyze/activate, and strain refinish materials • Identify product expiration dates as applicable • Identify and mix paint using a formula • Identify poor hiding colors; determine necessary action • Identify alternative color formula to achieve a blendable match • Identify the material's equipment and preparation differences between solvent and waterborne technologies
Two Skill/Concept	PFR 4.2 Correctly apply automotive paint to prepared surfaces. • Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the finish being applied • Apply selected product on test or let-down panel; check for color match • Apply single stage topcoat • Apply basecoat/clearcoat for panel blending and panel refinishing • Apply basecoat/clearcoat for overall refinishing

	• Remove nibs or imperfections from basecoat • Refinish plastic parts • Apply multi-stage coats for panel blending and overall refinishing • Tint color using formula to achieve a blendable match
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PFR 5: Students will identify causes and correction procedures for paint defects.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PFR 5.1 Identify paint defects, understand the causes, and correct paint defects such as: • Identify blistering (raising of the paint surface, air entrapment); correct the cause(s) and the condition • Identify a dry spray appearance in the paint surface; correct the cause(s) and the condition • Identify the presence of fish-eyes (crater-like openings) in the finish; correct the cause(s) and the condition • Identify lifting; correct the cause(s) and the condition • Identify clouding (mottling and streaking in metallic finishes); correct the cause(s) and the condition • Identify orange peel; correct the cause(s) and the condition • Identify overspray; correct the cause(s) and the condition • Identify solvent popping in freshly painted surface; correct the cause(s) and the condition • Identify sags and runs in paint surface; correct the cause(s) and the condition • Identify sanding marks or sand scratch swelling; correct the cause(s) and the condition • Identify contour mapping/edge mapping; correct the cause(s) and the condition • Identify color difference (off-shade); correct the cause(s) and the condition • Identify tape tracking; correct the cause(s) and the condition • Identify low gloss condition; correct the cause(s) and the condition • Identify poor adhesion; correct the cause(s) and the condition • Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.); correct the cause(s) and the condition • Identify corrosion; correct the cause(s) and the condition • Identify dirt or dust in the paint surface; correct the cause(s) and the condition • Identify water spotting; correct the cause(s) and the condition • Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition • Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition • Identify die-back conditions (dulling of the paint film showing haziness); correct the cause(s) and the condition • Identify chalking (oxidation); correct the cause(s) and the condition • Identify bleed-through (staining); correct the cause(s) and the condition • Identify pin-holing; correct the cause(s) and the condition

	• Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition • Identify pigment flotation (color change through film build); correct the cause(s) and the condition
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PRF 6: Students will understand and perform detailing of paint refinishing.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PRF 6.1 Perform final vehicle inspection. • Perform vehicle clean-up; complete quality control using a checklist • Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. • Sand, buff and polish fresh or existing finish to remove defects as required • Clean interior, exterior, and glass • Clean body openings (door jambs and edges, etc.) • Remove overspray

PRF 7: Students will demonstrate appropriate business practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	PRF 7.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	PRF 7.2 Apply ethical business practices.
Three Strategic Thinking	PRF 7.3 Apply excellent customer relations practices.



Automatic Transmission/Transaxle and Suspension/Steering

Career Cluster	Transportation, Distribution & Logistics
Course Code	20123
Prerequisite(s)	Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair - Recommended
Credit	1.0
Program of Study and Sequence	Foundational courses – Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair – Automotive Transmission/Transaxle and Suspension/Steering – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	ASE
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement *Autobody Technology
Resources	N/A

Course Description

Students will learn how to inspect, analyze, and service the vehicle's automatic transmission/transaxle and suspension/steering systems. They will learn how to evaluate problems and determine the correct solution for the task at hand. Students will comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Course standards are based on the Maintenance and Light Repair (MLR) standards for ASE MLR.

Program of Study Application

Automatic Transmission/Transaxle and Suspension/Steering is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, automotive technology career pathway.

Course Standards

ATSS 1: Students will demonstrate automotive technology safety practices, as identified in Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for an automotive repair facility.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	ATSS 1.1 Demonstrate automotive technology safety practices. ● Identify general shop safety rules and procedures ● Identify and use proper procedures for safe jack and lift operations ● Utilize proper ventilation procedures for working within the lab/shop area ● Identify the location and the types of fire extinguishers and other fire safety equipment ● Identify the location and use of eye wash stations ● Identify the location of posted evacuation routes ● Locate and demonstrate knowledge of Safety Data Sheets (SDS) ● Properly dispose chemicals in accordance with applicable federal, state, and local law

ATSS 2: Students will demonstrate proper tool selection and usage.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	ATSS 2.1 Demonstrate proper tool selection and usage. ● Identify tools and their usage in automotive applications ● Identify standard and metric designation ● Demonstrate safe handling and use of appropriate tools ● Demonstrate proper cleaning, storage, and maintenance of tools and equipment ● Demonstrate proper use of precision measuring tools (e.g. micrometer, dial-indicator, dial-caliper)

ATSS 3: Students will perform diagnostics and repair on the vehicle's automatic transmission and transaxle.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ATSS 3.1 Inspect and identify drivetrain components. ● Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins ● Check fluid level in a transmission or transaxle equipped with a dipstick ● Check fluid level in a transmission or transaxle not equipped with a dipstick ● Check transmission fluid condition; check for leaks ● Identify drive train components and configuration
Two Skill/Concept	ATSS 3.2 Perform maintenance on vehicle automatic transmission and transaxle while on the vehicle. ● Inspect, adjust, and/or replace external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral position switch ● Inspect for leakage at external seals, gaskets, and bushings

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Course: Automatic Transmission/Transaxle and Suspension/Steering

	• Inspect, replace and/or align power train mounts • Drain and replace fluid and filter(s); use proper fluid type per manufacturer specification
Four Extended Thinking	ATSS 3.3 Analyze the vehicle's automatic transmission and transaxle while off the vehicle. • Describe the operational characteristics of a continuously variable transmission (CVT) • Describe the operational characteristics of a hybrid vehicle drive train

ATSS 4: Students will perform maintenance on vehicle suspension and steering systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	ATSS 4.1 Inspect, Identify, and repair wheels and tires. • Inspect tire condition; identify tire wear patterns; check for correct tire size, application (load and speed ratings), and air pressure as listed on the tire information placard/label • Rotate tires according to manufacturer's recommendations including vehicles equipped with tire pressure monitoring systems (TPMS) • Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly • Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor • Inspect tire and wheel assembly for air loss; determine necessary action • Repair tire following vehicle manufacturer approved procedure • Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps • Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system (TPMS) including relearn procedure
Four Extended Thinking	ATSS 4.2 Analyze and evaluate the suspension and steering system components • Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins • Disable and enable supplemental restraint system (SRS); verify indicator lamp operation • Identify suspension and steering system components and configurations
Three Strategic Thinking	ATSS 4.3 Inspect and assess the suspension and steering system. • Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots • Inspect power steering fluid level and condition • Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification • Inspect for power steering fluid leakage • Remove, inspect, replace, and/or adjust power steering pump drive belt. • Inspect and replace power steering hoses and fittings • Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper

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Course: Automatic Transmission/Transaxle and Suspension/Steering

	• Inspect tie rod ends (sockets), tie rod sleeves, and clamps • Inspect upper and lower control arms, bushings, and shafts • Inspect and replace rebound bumpers • Inspect track bar, strut rods/radius arms, and related mounts and bushings • Inspect upper and lower ball joints (with or without wear indicators) • Inspect suspension system coil springs and spring insulators (silencers) • Inspect suspension system torsion bars and mounts • Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links • Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings • Inspect front strut bearing and mount • Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms • Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts • Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings • Inspect electric power steering assist system • Identify hybrid vehicle power steering system electrical circuits and safety precautions • Describe the function of suspension and steering control systems and components, (i.e. active suspension, and stability control)
Two Skill/Concept	ATSS 4.43 Inspect and measure vehicle wheel alignment. • Perform pre-alignment inspection; measure vehicle ride height • Describe alignment angles (camber, caster and toe)

Automotive Engine Repair and Performance

Career Cluster	Transportation, Distribution & Logistics
Course Code	20121
Prerequisite(s)	Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair - Recommended
Credit	1.0
Program of Study and Sequence	Foundational courses – Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair – Automotive Engine Repair and Performance – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	ASE
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement
Resources	N/A

Course Description

Completion of Automotive Engine Repair and Performance will help students prepare for post-secondary education and training. This course will further students' technical education experience and help prepare them for the workforce. Course standards are based on the Maintenance and Light Repair (MLR) standards for ASE MLR.

Students will learn:

- How to work safely on the vehicle in a workshop situation.
- Engine operation based on the six operating systems: lubrication, cooling, fuel, ignition, air induction and exhaust systems.
- General engine maintenance to include valve train, lubrication and cooling system.
- General engine performance to include computerized controls, fuel, air induction, exhaust systems and emissions control systems.

Program of Study Application

Automotive Engine Repair and Performance is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, automotive technology pathway.

Course Standards

EPER 1: Students will demonstrate automotive technology safety practices, as identified in Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for an automotive repair facility.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	EPER 1.1 Demonstrate automotive technology safety practices. • Identify general shop safety rules and procedures • Identify and use proper procedures for safe jack and lift operations • Utilize proper ventilation procedures for working within the lab/shop area • Identify the location and the types of fire extinguishers and other fire safety equipment • Identify the location and use of eye wash stations • Identify the location of posted evacuation routes • Locate and demonstrate knowledge of Safety Data Sheets (SDS)

EPER 2: Students will demonstrate proper tool selection and usage.

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	EPER 2.1. Demonstrate proper tool selection and usage: • Identify tools and their usage in automotive applications • Identify standard and metric designation • Demonstrate safe handling and use of appropriate tools • Demonstrate proper cleaning, storage, and maintenance of tools and equipment • Demonstrate proper use of precision measuring tools (e.g. micrometer, dial-indicator, dial-caliper)

EPER 3: Students will prepare the vehicle for service.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EPER 3.1 Perform preparatory procedures for vehicle service. • Identify information needed and the service requested on a repair order • Identify purpose and demonstrate proper use of fender covers, mats • Demonstrate use of the three C's: concern, cause, and correction • Review vehicle service history • Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction

EPER 4: Students will perform engine repair.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EPER 4.1 Perform engine maintenance operations. • Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins • Verify operation of the instrument panel engine warning indicators

	- Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action - Install engine covers using gaskets, seals, and sealers as required. - Verify engine mechanical timing - Perform common fastener and thread repair, to include: removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert - Identify service precautions related to service of the internal combustion engine of a hybrid vehicle
Two Skill/Concept	EPER 4.2 Understand component operation and perform maintenance on cylinder head and valve train. - Adjust valves (mechanical or hydraulic lifters) - Identify components of the cylinder head and valve train
Two Skill/Concept	EPER 4.3 Test, inspect and perform maintenance on the lubrication and cooling system. - Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plugs; determine necessary action - Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment - Remove, inspect, and replace thermostat and gasket/seal - Inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required - Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required - Identify components of the lubrication and cooling systems

EPER 5: Students will test, diagnose, and repair engine performance issues.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EPER 5.1. Perform engine diagnostics and analyze retrieved data. - Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins - Perform engine absolute manifold pressure tests (vacuum/boost); document results - Perform cylinder power balance test; document results - Perform cylinder cranking and running compression tests; document results - Perform cylinder leakage test; document results - Verify engine operating temperature - Remove and replace spark plugs; inspect secondary ignition components for wear and damage
Three Strategic Thinking	EPER 5.2. Test the computerized controls and analyze retrieved data. - Retrieve and record diagnostic trouble codes (DTC), On-board Diagnostic (OBD) monitor status, and freeze frame data; clear codes when applicable - Describe the use of the OBD monitors for repair verification
Two	EPER 5.3. Perform maintenance on the fuel, air Induction, and exhaust systems

Skill/Concept	• Replace fuel filter(s) where applicable • Inspect, service, or replace air filters, filter housings, and intake duct work • Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine necessary action • Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action • Check and refill diesel exhaust fluid (DEF)
Two Skill/Concept	EPER 5.4. Perform maintenance operations on emissions control system. • Inspect, test, and service Positive Crankcase Ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action

EPER 6: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EPER 6.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	EPER 6.2 Understand the concept and application of ethical business practices.
Three Strategic Thinking	EPER 6.3 Understand the concept and application of excellent customer relations practices.



Brakes/Manual Drivetrain & Axles

Career Cluster	Transportation, Distribution & Logistics
Course Code	20122
Prerequisite(s)	Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair - Recommended
Credit	1.0
Program of Study and Sequence	Foundational courses – Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair – Brakes/Manual Drivetrain & Axles – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	Automotive Service Excellence (ASE) Student Certification
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement
Resources	N/A

Course Description

Students in this course will learn theory and operation as well as diagnosis and repair of brake systems and manual drivetrains. Completion of this course will aid students as they continue their education at the post-secondary level or in the workforce and in the preparation for their ASE certification test. (The examples include what students may test for ASE (Automotive Service Excellence) certification). Course standards are based on the Maintenance and Light Repair (MLR) standards for ASE MLR.

Program of Study Application

Brakes/Manual Drivetrain & Axles is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, automotive technology pathway.

Course Standards

AB 1: Students will demonstrate automotive technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements, for an automotive repair facility.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	AB 1.1 Demonstrate automotive technician safety practices. • Use protective clothing and safety equipment according to OSHA and EPA requirements • Summarize the proper use of Safety Data Sheet (SDS) • Demonstrate the proper use of hand and power tools • Examine basic shop safety using OSHA standards. • Maintain a portfolio of successfully completed safety and equipment exams

AB 2: Students will demonstrate knowledge of brake system theory and procedure.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	AB 2.1 Analyze and diagnose automotive brake hydraulic and friction systems. • Identify and interpret brake system concerns; determine needed action • Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins • Describe procedure for performing a road test to check brake system operation including an anti-lock brake system (ABS) • Identify brake system components and configuration

AB 3: Students will demonstrate knowledge and procedure of the hydraulic brake system.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 3.1 Analyze and draw conclusions concerning malfunctions of brake hydraulic systems. • Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law) • Check master cylinder for internal/external leaks and proper operation; determine needed action • Identify components of hydraulic brake warning light system • Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; determine needed action
Two Skills/Concepts	AB 3.2 Apply repair skills to correct malfunctions of brake hydraulic systems. • Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports; determine needed action • Remove, bench bleed, and reinstall master cylinder • Replace brake lines, hoses, fittings, and supports • Fabricate brake lines using proper material and flaring procedures (double flare and ISO types) • Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification • Inspect, test, and/or replace components of brake warning light system • Bleed and/or flush brake system

	● Test brake fluid for contamination ● Measure brake pedal height, travel, and free play (as applicable); determine needed action
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AB 4: Students will demonstrate knowledge of theory and repair procedures for drum brake systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 4.1 Assess and evaluate operation of drum brake systems. ● Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns; determine needed action
Two Skill/Concept	AB 4.2 Repair drum brake systems. ● Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability ● Refinish brake drum and measure final drum diameter; compare with manufacturer's specification ● Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble ● Inspect wheel cylinders for leaks and proper operation; remove and replace as needed ● Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments

AB 5: Students will demonstrate knowledge of theory and repair procedures for disc brake systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 5.1 Assess and evaluate operation of disc brake systems. ● Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pulsation concerns; determine needed action ● Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine needed action ● Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations
Two Skill/Concept	AB 5.2 Repair disc brake systems. ● Remove, inspect, and/or replace brake pads and retaining hardware; determine needed action ● Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads; inspect for leaks ● Clean and inspect rotor and mounting surface; measure rotor thickness, thickness variation, and lateral runout; determine needed action ● Remove and reinstall/replace rotor ● Refinish rotor on vehicle; measure final rotor thickness and compare with specification ● Refinish rotor off vehicle; measure final rotor thickness and compare with specification ● Retract and re-adjust caliper piston on an integrated parking brake system.

	● Check brake pad wear indicator; determine needed action ● Remove and clean caliper assembly; inspect for leaks, damage, and wear; determine needed action
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AB 6: Students will demonstrate knowledge of theory and repair procedures for power assist units.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 6.1 Analyze power-assist units. ● Check brake pedal travel with and without engine running to verify proper power booster operation ● Identify components of the brake power assist system (vacuum and hydraulic); check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster

AB 7: Students will demonstrate knowledge of theory and repair procedures for related systems – Wheel Bearings, Parking Brakes and Electrical.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 7.1 Diagnose related systems (i.e., wheel bearings, parking brakes, electrical). ● Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine needed action ● Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed ● Check parking brake operation and parking brake indicator light system operation; determine needed action ● Check operation of brake stop light system
Two Skill/Concept	AB 7.2 Repair related systems. ● Replace wheel bearing and race ● Inspect and replace wheel studs ● Remove, reinstall, and/or replace sealed wheel bearing assembly ● Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings

AB 8: Students will demonstrate knowledge of theory and repair procedures for related systems – Antilock Brake Systems (ABS), Traction Control Systems (TCS), Electronic Stability Control (ESC).	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 8.1 Diagnose Electronic Brake Control Systems: ABS, TCS and ESC Systems ● Identify and inspect electronic brake control system components (ABS, TCS, ESC); determine needed action. ● 2. Describe the operation of a regenerative braking system

AB 9: Students will demonstrate knowledge of theory and repair procedures for manual drivetrain and axles.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Reproduction	AB 9.1 Identify manual transmission information. ● Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins

	Identify manual drivetrain and axle components and configuration
Two Skill/Concept	AB 9.2 Perform general maintenance procedures. - Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer's specification - Check fluid condition; check for leaks

AB 10: Students will perform maintenance procedures for hydraulic clutches.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 10.1 Check clutch hydraulic system. - Check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification - Check for hydraulic system leaks

AB 11: Students will define the operation of electronic manual transmission/transaxle.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Reproduction	AB 11.1 Research Manual Transmission/Transaxle. Describe the operational characteristics of an electronically controlled manual transmission/transaxle

AB 12: Students will inspect, diagnose, and perform repair procedures for drivetrain components.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall and Reproduction	AB 12.1 Inspect, diagnose, and repair drive shaft, half shafts, universal joints and constant-velocity (CV) joints. - Inspect, remove, and/or replace bearings, hubs, and seals - Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints - Inspect locking hubs - Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification

AB 13: Students will inspect, diagnose, and perform repair procedures for the differential assembly.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	AB 13.1 Perform maintenance on differential case assembly. - Clean and inspect differential case; check for leaks; inspect housing vent - Check and adjust differential case fluid level; use proper fluid type per manufacturer's specification - Drain and refill differential housing - Inspect and replace drive axle wheel studs

AB 14: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	AB 14.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three	AB 14.2 Understand the concept and application of ethical business practices.

Strategic Thinking	
Three Strategic Thinking	AB 14.3 Understand the concept and application of excellent customer relations practices.



Diesel Technology

Career Cluster	Transportation, Distribution & Logistics
Course Code	20107
Prerequisite(s)	Automotive Engine Repair and Performance
Credit	1.0
Program of Study and Sequence	Automotive Engine Repair and Performance – Diesel Technology – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement
Resources	N/A

Course Description

Students will develop an understanding of the Automotive Diesel service and repair pathway including Over the Road Transportation, Construction Equipment and Agricultural Equipment. The goal of this course is for students to receive industry training at the basic level and then be able to advance to the higher level of competency in this field. Completion of this course will help students with post-secondary education and training and prepare them for the workforce and further technical education, qualifications and experience.

Program of Study Application

Diesel Technology is a second pathway course in the Transportation, Distribution and Logistics career cluster, Diesel pathway.

Course Standards

DT 1: Students will adhere to health and safety standards in the workplace, including systems and procedures.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	DT 1.1 Apply skills and knowledge of health and safety practices and expectations to ensure a safe working environment for the individual and co-workers (fellow students). ● Identify and describe personal safety equipment, including eye, hair and hearing protection, clothing and footwear ● Know and understand how to work safely around vehicles in the workplace ● Identify, isolate and remove potential work place hazards, that is, fix the risks ● Know and understand how to work safely with hoists and lifting equipment ● Understand how to identify and manage potential and actual fires and fire hazards in the workplace ● Know and understand evacuation procedures in the workplace, including personal and collective responsibilities ● Know and understand how to work safely using hand and shop tools and equipment ● Know and understand how to work safely with hazardous materials, including disposal and storage

DT 2: Students will learn and understand basic electricity and electronics principles.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DT 2.1 Understand and implement basic electricity and electronic principles that apply to diesel powered equipment, including starting, charging, lighting and accessories. ● Understand basic electricity theory ● Explain the basic fundamentals of electricity ● Calculate values of resistance, current and voltage using Ohms Law. ● Explore series circuits ● Investigate parallel circuits ● Examine series-parallel circuits ● Explore common electrical components ● Investigate the starter, its related components and circuits ● Explore the principles and components relating to the charging circuit
Two Skill/Concept	DT 2.2 Perform basic electrical repair techniques. ● Make solder connections ● Demonstrate the proper use of a digital multi-meter ● Diagnose the condition of starter circuits, performing the necessary steps using a load tester and multi-meter ● Analyze the function and condition of a lead-acid battery

DT 3: Students will demonstrate their understanding of basic aspects of diesel engines.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	DT 3.1 Understand the technical and nontechnical aspects of diesel engines. • Know and understand different types of hand, shop and measurement tools • Distinguish between different types of fasteners • Understand the role of the technician in the diesel industry • Identify, define and demonstrate basic diesel engine principles • Identify and define power formulas in diesel industry • Disassemble a diesel engine • Assemble a diesel engine per engine manual • Demonstrate the ability to rebuild a cylinder head • Start a diesel engine

DT 4: Students will apply principles of basic hydraulic systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DT 4.1 Research and inspect basic mobile hydraulics. • Evaluated different types of hydraulic pumps for possible repairs (e.g. gear, vane, and piston) • Report how basic hydraulic systems have evolved and developed • Calculate the force of a given cylinder under given pressures • Inspect a hydraulic jack • Examine a hydraulic cylinder • Explore the fundamentals of hydraulic ISO symbols

DT 5: Students will demonstrate how basic braking systems operate.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DT 5.1 Identify and understand basic vehicle braking systems, including hydraulic and air brake systems. • Explore the principles of brakes • Demonstrate the hydraulic drum brake rebuild procedure • Demonstrate the hydraulic disc brake rebuild procedure • Understand different types of power brakes • Explain the operation of brake valves • Examine the fundamentals of the air system

DT 6: Students will apply principles of fuel systems on diesel engines.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DT 6.1 Differentiate between, and identify components of, fuel delivery systems and electrical/hybrid technologies. • Identify principles, components, systems and circuits for fuel delivery systems • Analyze fuel injection components and principle • Demonstrate how to time an in-line fuel pump • Demonstrate how to time a rotary fuel pump • Analyze non-starting situations related to fuel and engine phasing

DT 7: Students will understand components and apply principles of undercarriage components and systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	DT 7.1 Demonstrate knowledge of drivetrain components and function. • Demonstrate knowledge of parts and components of an axle, u joints, driveshaft and other drivetrain components
Two Skill/Concept	DT 7.2 Demonstrate knowledge of parts and components of the chassis. • Identify suspension, steering, shocks, airbag, and other chassis components • Demonstrate operation plus inspect and adjust fifth-wheel plate
Two Skill/Concept	DT 7.3 Demonstrate knowledge of parts and components of differentials and transmissions. • Identify knowledge of differential and transmission components
Two Skill/Concept	DT 7.4 Demonstrate knowledge of tires and rims. • Inspect and repair tires • Identify tire and rim wear • Understand tire markings (e.g. DOT numbers.)

DT 8: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	DT 8.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	DT 8.2 Understand the concept and application of ethical business practices.
Three Strategic Thinking	DT 8.3 Understand the concept and application of excellent customer relations practices.



Electrical/Electronic Systems and Heating Ventilation Air Conditioning (HVAC)

Career Cluster	Transportation, Distribution & Logistics
Course Code	20105
Prerequisite(s)	Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair - Recommended
Credit	1.0
Program of Study and Sequence	Foundational courses – Introduction to Vehicle Systems and Maintenance or Maintenance and Light Repair – Electrical/Electronic Systems and HVAC – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	Automotive Service Excellence (ASE) Student Certification
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Automotive Technology Pathway Endorsement; *Automotive Technology
Resources	N/A

Course Description

Students in Electrical/Electronic Systems and Heating Ventilation Air Conditioning (HVAC) will learn theory and operation as well as diagnosis and repair of Electrical/Electronic and HVAC systems. Completion of this course will aid students as they continue their education at the post-secondary level or in the workforce and in preparation for the ASE certification test. Course standards are based on the Maintenance and Light Repair (MLR) standards for ASE MLR.

Program of Study Application

Electrical/Electronic Systems and Heating Ventilation Air Conditioning (HVAC) is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, automotive technology pathway.

Course Standards

EEHVAC 1: Students will demonstrate automotive technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements, for an automotive repair facility.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	EEHVAC 1.1 Demonstrate automotive technician safety practices. ● Use protective clothing and safety equipment according to OSHA and EPA requirements ● Summarize the proper use of safety data sheet (SDS) ● Demonstrate the proper use of hand and power tools ● Examine basic shop safety using OSHA standards ● Maintain a portfolio of successfully completed safety and equipment exams

EEHVAC 2: Students will perform maintenance, diagnostic and repair procedures of electrical/electronic systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EEHVAC 2.1 Demonstrate knowledge of the vehicle electrical system. ● Research vehicle service information including vehicle service history, service precautions, and technical service bulletins ● Demonstrate knowledge of electrical/electronic series, parallel, and series and parallel circuits using principles of electricity (Ohm's Law) ● Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance ● Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits ● Identify electrical/electronic system components and configuration
Two Skills/Concepts	EEHVAC 2.2 Test and repair electrical problems. ● Use a test light to check operation of electrical circuits ● Use fused jumper wires to check operation of electrical circuits ● Measure key-off battery drain (parasitic draw) ● Inspect and test fusible links, circuit breakers, and fuses; determine necessary action ● Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair) ● Use wiring diagrams to trace electrical/electronic circuits

EEHVAC 3: Students will perform maintenance, diagnostic and repair procedures while also identifying characteristics of high voltage battery systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>

Career Cluster: Transportation, Distribution & Logistics
Course: Electrical/Electronic Systems and Heating Ventilation Air Conditioning (HVAC)

One Recall	EEHVAC 3.1 Identify battery requirements. ● Identify safety precautions for high voltage systems on electric, hybrid electric, and diesel vehicles ● Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery ● Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures
Two Skills/Concepts	EEHVAC 3.2 Service battery. ● Perform battery state-of-charge test; determine necessary action ● Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine necessary action ● Maintain or restore electronic memory functions ● Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs ● Perform slow/fast battery charge according to manufacturer's recommendations ● Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply

EEHVAC 4: Students will perform maintenance, diagnostic and repair procedures of starting systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	EEHVAC 4.1 Explain starting system operation. ● Demonstrate knowledge of an automatic idle-stop/start-stop system
Two Skill/Concept	EEHVAC 4.2 Inspect and repair starting system. ● Perform starter current draw test; determine necessary action ● Perform starter circuit voltage drop tests; determine necessary action ● Inspect and test starter relays and solenoids; determine necessary action ● Remove and install starter in a vehicle ● Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action

EEHVAC 5: Students will perform maintenance, diagnostic and repair procedures of the charging system.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EEHVAC 5.1 Remove, inspect, and replace charging system components. ● Perform charging system output test; determine necessary action ● Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment ● Remove, inspect, and/or replace generator (alternator) ● Perform charging circuit voltage drop tests; determine necessary action

EEHVAC 6: Students will identify and perform repair procedures of electrical systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EEHVAC 6.1 Identify and inspect lighting, instrument cluster, driver information, and body electrical systems and verify operation. ● Identify system voltage and safety precautions associated with high-intensity discharge headlights ● Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed ● Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators ● Verify windshield wiper and washer operation; replace wiper blades ● Describe the operation of keyless entry/remote-start systems
Two Skill/Concept	EEHVAC 6.2 Perform the following repair operations. ● Aim headlights ● Disable and enable supplemental restraint system (SRS) and verify indicator lamp operation ● Remove and reinstall door panel

EEHVAC 7: Students will research and identify heating, ventilation, and air conditioning components.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	EEHVAC 7.1 Obtain vehicle service information on heating and air conditioning components. ● Research vehicle service information, including refrigerant/oil type, vehicle service history, service precautions, and technical service bulletins ● Identify heating, ventilation and air conditioning (HVAC) components and configuration

EEHVAC 8: Students will inspect and understand repair procedures for the refrigeration system.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EEHVAC 8.1 Inspect and demonstrate understanding of repair procedures for refrigeration system components. ● Inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action ● Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions ● Inspect A/C condenser for airflow restrictions; determine necessary action

EEHVAC 9: Students will perform repair procedures for the heating and cooling system.	
<i>Webb Level</i>	<i>Sub-indicator</i>

Career Cluster: Transportation, Distribution & Logistics
Course: Electrical/Electronic Systems and Heating Ventilation Air Conditioning (HVAC)

Two Skill/Concept	EEHVAC 9.1 Analyze heating and engine cooling systems problems. ● Inspect engine cooling and heater systems hoses and pipes; determine necessary action
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EEHVAC 10: Students will perform inspection and identification procedures for the heating, ventilation and air conditioning (HVAC) system.

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	EEHVAC 10.1 Inspect and identify operating systems and related controls. ● Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action ● Identify the source of A/C system odors

EEHVAC 11: Students will understand and apply appropriate business practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	EEHVAC 11.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	EEHVAC 11.2 Understand the concept and application of ethical business practices.
Three Strategic Thinking	EEHVAC 11.3 Understand the concept and application of excellent customer relations practices.



Introduction to Auto Body and Estimating

Career Cluster	Transportation, Distribution & Logistics
Course Code	20124
Prerequisite(s)	None
Credit	0.5 to 1.0
Program of Study and Sequence	Foundation Course – Cluster Course – Introduction to Auto Body and Estimating – Auto Body Non-Structural Analysis and Damage Repair or Auto Body Structural Analysis and Damage Repair
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Field Trips, Youth Internships, Industry Speakers
Industry Certifications	ASE (Automotive Service Excellence); OSHA (Occupational Safety and Health Administration) 10
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement; *Autobody Technology
Resources	N/A

Course Description

This course is designed to expose the students to different industry terminology, safety practices, auto body estimating and basic auto body repairs. This course is for students to receive basic industry-based training before advancing to higher level courses in this field.

Program of Study Application

Introduction to Auto Body and Estimating is a first pathway course in the Transportation, Distribution and Logistics career cluster, Automotive Body Collision and Refinishing pathway.

Course Standards

IAB 1: Students will demonstrate understanding of auto body safety practices and careers.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skills/Concepts	IAB 1.1 Demonstrate auto body safety practices. ● Select and use proper personal safety equipment; take the necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations ● Locate procedures and precautions that may apply to the vehicle being repaired ● Identify vehicle system hazard types, locations and recommended procedures (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles) before inspecting or replacing components
Two Skill/Concept	IAB 1.2 Analyze career opportunities in the Transportation, Distribution, & Logistics career cluster. ● Create a resume ● Contact industry leaders ● Identify related careers of auto body

IAB 2: Demonstrate uses of auto body tools and equipment.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IAB 2.1 Demonstrate hand and power tools and their uses. ● Name tools and their uses ● Differentiate between pneumatic and electric ● Demonstrate appropriate safety procedures when using tools ● Show how to maintain tools
Three Strategic Thinking	IAB 2.2 Analyze uses of a compressed air system. ● Components of a compressed air system ● Compressed air system maintenance ● Uses of compressed air ● Safety issues when using compressed air ● Operations of a compressed air system ● Demonstrate use of compressed air in different operations

IAB 3: Employ collision repair estimating processes.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IAB 3.1 Demonstrate the process involved in obtaining important information. ● Determine and record customer/vehicle owner information ● Identify and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, productions date, engine type and assembly plant ● Identify and record vehicle mileage and options, including trim level, paint code, transmission, accessories and modifications

Two Skills/Concepts	IAB 3.2 Demonstrate the process of writing a repair estimate. • Position the vehicle for inspection • Prepare vehicle for inspection by providing access to damaged areas • Analyze damage to determine appropriate methods for overall repairs • Identify and record pre-existing damage • Apply appropriate estimating and parts nomenclature (terminology) • Determine and apply appropriate estimating sequence • Utilize estimating guide procedure pages • Identify operations requiring labor value judgment • Select appropriate labor value for each operation (structural, non-structural, mechanical, and refinish) • Apply math skills to establish charges and totals • Identify procedural differences between computer generated and manually written estimates • Recognize the differences in estimation procedures when using different information provider systems
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IAB 4: Apply auto body repair and finishing techniques.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IAB 4.1 Demonstrate basic auto body repair techniques. • Explain proper corrosion protection methods and why you apply them • Demonstrate welding processes • Apply metal straightening techniques • Explain the uses of different body filler options • Demonstrate plastic repair techniques • Explain the purpose of block sanding • Demonstrate block sanding techniques • Demonstrate Hammer and Dolly procedures • Demonstrate proper uses of sandpaper grits
Two Skill/Concept	IAB 4.2 Demonstrate processes in automotive finishing. • Know and understand proper overspray protection • Demonstrate proper refinishing procedures • Explain proper surface preparation • Apply overspray protection • Prepare different surfaces properly • Demonstrate how to use refinishing equipment (including maintenance) • Perform a spray gun test

IAB 5: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IAB 5.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	IAB 5.2 Understand the concept and application of ethical business practices.

Three Strategic Thinking	IAB 5.3 Understand the concept and application of excellent customer relations practices.
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Introduction to Vehicle Systems & Maintenance

Career Cluster	Transportation, Distribution & Logistics
Course Code	20106
Prerequisite(s)	None
Credit	0.5 or 1.0
Program of Study and Sequence	Any Foundation course – Introduction to Vehicle Systems & Maintenance – pathway course in the automotive technology; automotive body, collision & refinishing; or diesel pathway
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Automotive Technology Pathway Endorsement; *Automotive Technology *7-12 Technology Education
Resources	N/A

Course Description

Intro to Vehicle Systems & Maintenance is an introductory automobile course. Students will study the basic principles of electrical and mechanical systems used in motor vehicle technology while developing core hand skills. This course is designed to give learners information on basic ownership and maintenance of a vehicle, insights into careers in the automotive service and repair industry, and encourage learners to undertake practical maintenance and repair tasks.

Program of Study Application

Intro to Vehicle Systems and Maintenance is a cluster course in the Transportation, Distribution and Logistics career cluster. Intro to Vehicle Systems and Maintenance will prepare a student to enter any of the pathways in the cluster.

Course Standards

IVSM 1: Students will demonstrate automotive technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements, for an automotive repair facility.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 1.1 Demonstrate automotive technician safety practices. • Use protective clothing and safety equipment according to OSHA and EPA requirements • Summarize the proper use of safety data sheet (SDS) • Demonstrate the proper use of hand and power tools • Examine basic shop safety using OSHA standards • Maintain a portfolio of successfully completed safety and equipment exams
Two Skill/Concept	IVSM 1.2 Understand the way in which waste gasses, emissions, and other environmentally destructive substances are generated and their effects on the environment. • Understand the formation of carbon monoxide in internal combustion engines and the effects on the environment • Study the effects of vehicle emissions on the ecosystem • Compare the emissions of hydro-fuel cell, electric, and gasoline powered vehicles

IVSM 2: Students explore career opportunities in the Transportation, Distribution and Logistics career cluster and develop leadership skills.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 2.1 Demonstrate independent and teamwork skills. • Develop a teamwork project (change oil, tire rotation)
Two Skill/Concept	IVSM 2.2 Explore career opportunities within the industry. • Utilize guidance software to research and report on career opportunities • Update student portfolios and personal learning plans

IVSM 3: Students will demonstrate an understanding of the safe and appropriate use of tools, equipment and work processes.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 3.1. Understand and use the appropriate tools and equipment. • Demonstrate proper usage of tools and equipment • Inspect and perform preventative and required maintenance of tools and equipment
Two Skill/Concept	IVSM 3.2. Diagnose and analyze components and systems. • Use DMM (digital multi-meter) to measure electrical voltage, amps and resistance • Demonstrate use of a load tester on a battery, charging, and starting systems

Two Skill/Concept	IVSM 3.3. Select and demonstrate proper use of measuring devices and mathematical formulas. - Identify the measuring instruments needed to assure proper tolerance ranges can be achieved (micrometer, caliper) - Identify, apply, and calculate mathematical formulas that apply to the automotive industry (Ohm's Law, cubic displacement, horse power)
Two Skill/Concept	IVSM 3.4. Use and understand standard and metric units of measurements. - Measure brake rotor with caliper and compare to specifications - Measure tread width and mathematically calculate the sidewall height of the tire using the aspect ratio of the tire - Convert standard units and metric units
Two Skill/Concept	IVSM 3.5. Use measurement devices to diagnose and repair vehicles and components following industry standards. - Identify tools and equipment used to measure caster, camber and toe - Measure resistance in spark plug high-tension leads to assure proper operation of ignition system
Two Skill/Concept	IVSM 3.6. Demonstrate access and proper usage of Technical Service Bulletins (TSB) and service manuals. - Utilize service information to find vehicle specifications - Use vehicle owner's manual to find proper quantity and quality of oil to use to perform an engine oil and filter change - Use scan tool to pull trouble codes from vehicle's computer diagnostic system
Three Strategic Thinking	IVSM. 3.7. Comprehend the importance of calibration processes, systems, and techniques using various measuring and testing devices. - Calibrate a dial indicator - Check the accuracy of an outside/inside micrometer - Calibrate an Ohm meter

IVSM 4: Students understand scientific principles in relation to chemical, mechanical, and physical functions of various power plants and vehicle systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 4.1. Demonstrate knowledge of the operation of the internal combustion engine. - Identify different types of gasoline and diesel engines and 2 and 4 stroke engines - Compare the similarities and differences in a 2 and 4 stroke cycle
Two Skill/Concept	IVSM 4.2. Demonstrate a basic understanding of the operating principles of heating and air conditioning systems. - Identify the components of heating and air conditioning systems - Describe the air flow and refrigerant flow in heating and air conditioning systems
Two Skill/Concept	IVSM 4.3. Compare alternate fuel and power sources.

	● Identify and research hybrid, fuel cell, and electric vehicles and explain how these vehicles work for a written report or presentation ● Understand fundamental hazards of dealing with hybrid, fuel cell, and electric vehicles
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IVSM 5: Students perform and document maintenance procedures according to manufacturers' specifications.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IVSM 5.1. Demonstrate the procedures and practices for manufacturers' repair and maintenance schedules. ● Change oil and filter according to manufacturer's specs ● Check proper inflation and condition of vehicle tires ● Check and refill critical fluids ● Inspect belts and hoses
Three Strategic Thinking	IVSM 5.2. Demonstrate the use of service information to repair a vehicle. ● Utilize service information to find vehicle specifications ● Use vehicle owner manual to find proper quantity and quality of oil to use to perform an engine oil and filter change
Three Strategic Thinking	IVSM 5.3 Demonstrate tire maintenance/tire care (tire rotation, tread depth, air pressure, and tire wear types).

IVSM 6: Students explore considerations when purchasing, owning, maintaining, and selling a vehicle.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 6.1 Understand and demonstrate skills for purchasing, owning, maintaining and selling a vehicle. ● Demonstrate knowledge of purchasing a vehicle, including how to select a vehicle ● Explore various vehicle types ● Compare and contrast buying from a dealer versus purchasing from a private party, and buying versus leasing a vehicle ● Understand the costs associated with owning a vehicle including licensing, registration, insurance, loans, interest rates, credit scores, depreciation and other factors

IVSM 7: Students will understand and apply appropriate vehicle service and repairs.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 7.1 Perform general automotive diagnosis and repair in professional manner within National Automotive Technicians Education Foundation (NATEF) standards. ● Perform engine compression test (dry/wet) ● Set gap and replace spark plugs and wires as needed

Two Skill/Concept	IVSM 7.2 Perform basic roadside maintenance and repairs, including simple diagnostics. ● Replace a tire and rim, change wiper blades, and demonstrate other basic maintenance tasks. ● Diagnose what to do if check engine light comes on ● Check gauges for sufficient oil pressure, fuel, and other indications
One Recall and Recognition	IVSM 7.3 Understand what items should be in a vehicle in case of problems. ● Flashlights, blankets, basic food, jumper cables, tow strap, small/folding shovel, first aid kit, candle, safety triangle/flare, can of green slime, and other basic necessities.
Two Skill/Concept	IVSM 7.4 Demonstrate ability to maintain and service lubrication and cooling systems. ● Analyze engine oil pressure ● Remove and install an oil pressure sending unit ● Inspect and test cooling system and pressure cap
Two Skill/Concept	IVSM 7.5 Understand the basic operation of computer-controlled systems, and location and identification of related parts. ● Use a code reader and or scanner to diagnose computer system failure ● Locate and test computer components ● Clear trouble codes from computer with scanner

IVSM 8: Students understand the function, principles and operation of electrical systems using manufacturers' and industry standards.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 8.1 Demonstrate an understanding of how to diagnose and repair electrical systems. ● Clean battery terminals and electrical connections ● Use DVOM (digital volt ohm meter) to check voltage drop at connections ● Use DVOM to check resistance in electrical circuits
Two Skill/Concept	IVSM8.2 Diagnose and service batteries. ● Check battery state-of-charge with hydrometer or DVOM ● Check battery load capacity with load tester ● Remove and replace battery
Two Skill/Concept	IVSM 8.3 Demonstrate knowledge needed to diagnose and repair starting and charging systems. ● Check starting system draw with starting system tester ● Check charging system output with charging system tester
Two Skill/Concept	IVSM 8.4 Demonstrate ability to properly diagnose and repair lighting systems. ● Adjust headlights ● Remove and replace headlight/taillight bulbs ● Replace bulbs ● Test electrical system circuits and components
Two Skill/Concept	IVSM 8.5 Demonstrate ability to properly diagnose and repair heating and air conditioning systems. ● Test strength and condition of coolant

	● Remove and replace coolant and flush if needed ● Test output temperature of A/C system
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IVSM 9: Students understand the function and principles of automotive brake, steering and suspension, automatic and manual transmission systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IVSM 9.1 Demonstrate how to diagnose and service hydraulic and friction systems. ● Check brake pad dimensions and conditions ● Check condition of rotor and/or drum ● Check for leaks, cracks or bulges in brake lines ● Check emergency brake cable operation
Two Skill/Concept	IVSM 9.2 Demonstrate how to diagnose and service steering and suspension systems. ● Check for proper power steering fluid condition and level ● Check condition of front and rear struts and/or shocks
Two Skill/Concept	IVSM 9.3 Demonstrate how to diagnose and service automatic and manual transmissions. ● Check automatic and manual transmission fluid levels ● Replace automatic transmission fluid and filter



Maintenance and Light Repair

Career Cluster	Transportation, Distribution & Logistics
Course Code	20104
Prerequisite(s)	None
Credit	0.5 or 1.0
Program of Study and Sequence	Any foundation course – Maintenance and Light Repair (MLR) – Any advanced course
Student Organization	SkillsUSA
Coordinating Work-Based Learning	N/A
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Automotive Technology Pathway Endorsement; *Automotive Technology
Resources	N/A

Course Description

This is an entry level course where students will learn basic maintenance procedures and safe work practices. The goal of this course is for students to receive industry-based training at the basic level and advance to the higher level of competency in this field. Students who complete this course should be able to test for their ASE certification in this field.

Program of Study Application

Maintenance and Light Repair is a cluster course in the Transportation, Distribution and Logistics career cluster. Success in Maintenance and Light Repair will prepare a student to enter any of the pathways in the cluster.

Course Standards

MLR 1: Students will demonstrate safety practices for automotive repair.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 1.1 Identify and demonstrate general shop safety rules and procedures using Occupational Safety and Health Administration (OSHA) standards. ● Examine basic shop safety using OSHA 10 standards ● Utilize proper ventilation procedures for working within the lab/shop area ● Identify marked safety areas ● Identify location and types of fire extinguishers and other fire safety equipment ● Identify location and use of eyewash stations ● Identify location of posted evacuation routes ● Demonstrate knowledge of industry requirements for personal protective clothing and equipment ● Identify and wear proper clothing, hairstyles and jewelry for lab/shop activities ● Locate and demonstrate knowledge of safety data sheets (SDS)

MLR 2: Students will demonstrate an understanding of the safe and appropriate use of tools and equipment.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	LR 2.1 Utilize safe procedures for handling of tools and equipment. ● Identify and use proper placement of floor jacks and jack stands ● Identify and use proper procedures for safe lift operation ● Demonstrate knowledge of safety aspects of supplemental restraint systems (SRS), electronic brake control systems and hybrid vehicle high voltage circuits ● Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge [HID] lamps, ignition systems, injection systems, etc.)

MLR 3: Students will locate needed information.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MLR 3.1 Identify sources of service information. ● Locate and use paper and electronic manuals ● Locate and use Technical Service Bulletins (TSB) ● Demonstrate awareness of special service messages, service campaigns/recalls, vehicle/service warranty applications, and service interval recommendations
One Recall	MLR 3.2 Identify proper vehicle identification information. ● Locate vehicle identification number (VIN) and production date code ● Apply knowledge of VIN information ● Demonstrate awareness of other vehicle information labels (such as tire, emissions, etc.)

MLR 4: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	MLR 4.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	MLR 4.2 Understand the concept and application of ethical business practices.
Three Strategic Thinking	MLR 4.3 Understand the concept and application of excellent customer relations practices.

MLR 5: Students will perform basic vehicle service.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 5.1 Perform basic vehicle service. ● Determine fluid type requirements and identify fluid ● Check and adjust engine oil ● Check and adjust engine coolant level ● Check and adjust power steering fluid level ● Check and adjust brake fluid level ● Check and adjust windshield washer fluid level ● Check and adjust differential /transfer case fluid level ● Check and adjust transmission fluid level ● Check and replace wiper blades ● Inspect drive belts, tensioners, and pulleys; check pulley and belt alignment ● Inspect and replace air filter ● Check and adjust tire air pressure ● Inspect exhaust system

MLR 6: Students will inspect and repair engine.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IMLR 6.1 Test and perform actions necessary to repair engine. ● Demonstrate knowledge of four-cycle engine ● Inspect engine assembly for fuel, oil coolant and other leaks; determine necessary action ● Perform cooling system pressure tests; test coolant condition; inspect and test radiator, pressure cap, coolant recovery tank and hoses; perform necessary action ● Test cooling system for the presence of combustion gases ● Drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required ● Perform oil and filter change; reset oil life monitoring system where applicable ● Remove and replace radiator; replace radiator hoses ● Inspect powertrain mounts; determine necessary action

MLR 7 Students will service an automatic transmission.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 7.1 Service transmission system. ● Drain automatic transmission fluid ● Visually inspect the amount of debris in oil pan ● Remove filter and install new filter ● Install the proper fluid to the proper level

MLR 8: Students will inspect, diagnose and repair manual drive train and axles.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 8.1 Diagnose and repair manual drive train and axles. ● Diagnose fluid loss, level, and condition concerns; determine necessary action ● Drain and fill transmission/transaxle and final drive unit ● Identify and inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; determine necessary action ● Identify and inspect hydraulic clutch slave and master cylinders, lines and hoses; determine necessary action ● Bleed clutch hydraulic system ● Inspect constant velocity (CV) joint boots ● Remove and replace rear wheel drive shaft

MLR 9: Students will repair suspension and steering.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 9.1 Diagnose suspension and steering; determine necessary action. ● Determine proper power steering fluid types ● Flush, fill and bleed power steering system ● Diagnose power steering fluid leakage; determine necessary action ● Lubricate suspension and steering systems ● Inspect, remove and replace shock absorbers ● Inspect and install stabilizer bar bushings, brackets, and links ● Inspect and install strut cartridge or assembly, coil spring, insulators (silencers), and upper strut mount ● Perform pre-alignment inspection and measure vehicle ride height; determine necessary action ● Demonstrate knowledge of the principles of steering geometry using caster, camber and toe
Two Skill/Concept	MLR 9.2 Inspect and repair tire and wheel assembly. ● Diagnose tire wear patterns; determine necessary action ● Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action ● Identify vehicles equipped with a tire pressure monitoring system (TPMS) ● Demonstrate knowledge of service considerations of vehicles equipped with a TPMS

	● Rotate tires according to manufacturer's recommendations ● Balance wheel and tire assembly (static and dynamic) ● Dismount, inspect, and remount tire on wheel ● Repair tire using internal patch ● Reinstall wheel; torque lug nuts
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MLR 10: Students will inspect, diagnose and repair brake assembly.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 10.1 Diagnose and repair brake fluid system. ● Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and support; determine necessary action ● Select, handle, and fill brake fluids to proper level ● Bleed brake system ● Test brake fluid for contamination; determine necessary action
Two Skill/Concept	MLR 10.2 Inspect and repair brake shoes and drum assemblies. ● Remove, clean, inspect and measure brake drums; determine necessary action ● Refinish brake drum; measure final drum diameter ● Remove, clean, inspect brake shoes, springs, pins, clips, levers, adjuster/self-adjuster, other related brake hardware, and backing support plates; lubricate and reassemble ● Inspect and install wheel cylinders ● Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings ● Install wheel, torque lug nuts, and make final checks and adjustments
Two Skill/Concept	MLR 10.3 Inspect and repair caliper assembly. ● Remove caliper assembly; inspect for leaks and damage to caliper housing; determine necessary action ● Clean and inspect caliper mounting and slides/pins for wear, operation and damage; determine necessary action ● Remove, inspect and replace pads and retaining hardware; determine necessary action ● Reassemble, lubricate, and reinstall caliper, pads and related hardware; seat pads and inspect for leaks
Two Skill/Concept	MLR 10.4 Inspect and repair rotor assembly. ● Clean, inspect and measure rotor thickness, lateral runout and thickness variation; determine necessary action ● Remove and reinstall rotor ● Refinish rotor on vehicle; measure final rotor thickness ● Refinish rotor off vehicle; measure final rotor thickness ● Install wheel. Torque lug nuts and make final checks and adjustments
One Recall	MLR 10.5 Inspect and repair vacuum supply. ● Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster

	● Inspect vacuum-type power booster unit for leaks; inspect the check valve for proper operation; verify proper booster function ● Demonstrate knowledge of the causes of wheel bearing noises, wheel shimmy and vibration concerns ● Check parking brake cables and components for wear, binding and corrosion; clean, lubricate, adjust or replace as needed
Two Skill/Concept	MLR 10.6 Inspect and repair brake indicator light components. ● Check parking brake and indicator light system operation; determine necessary action ● Check operation of brake stop light system; determine necessary action ● Replace tapered roller wheel bearing and race ● Clean, inspect, lubricate, install and adjust wheel bearing ● Identify and inspect electronic brake control system components; determine necessary action ● Demonstrate knowledge of the operation of the brake hydraulic failure warning light

MLR 11: Students will inspect, test and repair electrical/electronic systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MLR 11.1 Diagnose electrical circuit problems. ● Diagnose electrical/electronic integrity of series, parallel and series-parallel circuits using principles of electricity (Ohm's Law) ● Demonstrate use of wiring diagrams during diagnosis of electrical circuit problems ● Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems, including source voltage, voltage drop, current flow and resistance ● Check electrical circuits with a test light; determine necessary action ● Check electrical circuits using fused jumper wires; determine necessary action ● Demonstrate knowledge of the causes and effects of shorts, grounds, opens and resistance problems in electrical/electronic circuits ● Measure key-off battery drain (parasitic draw); determine necessary action ● Inspect and test fusible links, circuit breakers and fuses; determine necessary action ● Inspect and test switches, connectors, relays and wires of electrical/electronic circuits ● Repair connectors and terminal ends ● Perform solder repair of electrical wiring
Two Skill/Concept	MLR 11.2 Inspect and repair battery problems. ● Perform battery state-of-charge test; determine necessary action ● Perform battery capacity test; confirm proper battery capacity for vehicle application; determine necessary action ● Maintain or restore electronic memory functions ● Inspect, clean, fill, and/or replace battery, battery cables, connectors, clamps and hold-downs

	● Perform battery charge ● Start a vehicle using jumper cables and a battery or auxiliary power supply
Two Skill/Concept	MLR 11.3 Diagnose and repair starter. ● Perform starter current draw tests; determine necessary action ● Perform starter circuit voltage drop tests; determine necessary action ● Inspect and test starter relays and solenoids; determine necessary action ● Remove and replace starter
Two Skill/Concept	MLR 11.4 Diagnose and repair charging system. ● Perform charging system output test; determine necessary action ● Remove and replace generator (alternator) ● Diagnose the cause of dim, or no light operation; determine necessary action ● Inspect, replace, and aim headlights and bulbs

MLR 12: Students will inspect, diagnose and repair heating and air conditioning.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 12.1 Identify and visually inspect A/C system components. ● Locate refrigerant label and identify specified refrigerant type (e.g., R-12, R-134a) ● Conduct preliminary performance test of A/C system and determine necessary action ● Conduct performance test of the heater/ventilation system ● Inspect and replace cabin air filter

MLR 13: Students will inspect, diagnose and improve engine performance.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	MLR 13.1 Perform the necessary tests and repairs to improve engine performance. ● Perform engine cranking and running vacuum tests; determine necessary action ● Perform cylinder power balance test; determine necessary action ● Perform cylinder cranking compression test; determine necessary action ● Perform cylinder leakage test; determine necessary action ● Verify engine operating temperature; determine necessary action ● Retrieve and record stored diagnostic trouble codes, On-Board Diagnostics (OBD) monitor status and freeze frame data; clear codes when applicable ● Obtain and interpret scan tool data ● Perform fuel pressure test ● Replace fuel filters ● Remove and replace secondary ignition components ● Remove and replace thermostat and gasket/seal ● Perform common fastener and thread repair, to include: removing broken bolt, restoring internal and external threads, and repairing internal threads with a threaded insert

MLR 14: Students explore career opportunities in the transportation, distribution and logistics career cluster and develop leadership skills.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	MLR 14.1 Research career opportunities in the transportation, distribution and logistics fields. ● Utilizing career exploration software, research and write a report on career opportunities in the field ● Utilizing career exploration software, research educational requirements for a chosen career path ● Utilizing career exploration software, update student portfolio



Powersports

Career Cluster	Transportation, Distribution & Logistics
Course Code	20111
Prerequisite(s)	None
Credit	None
Program of Study and Sequence	Any Foundation course – Powersports – Any pathway course - Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job Shadow
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Automotive Technology Pathway Endorsement *Automotive Technology; *7-12 Technology Education
Resources	N/A

Course Description

Powersports is an introductory course for students interested in obtaining skills needed to maintain and repair powersports vehicles. Students will study the various powersports types, parts identification, and engine operation along with other systems and components found in powersports vehicles. Students will inspect, disassemble, reassemble, and troubleshoot an internal combustion engine and all other systems found in powersports.

Program of Study Application

Powersports is a cluster course within the Transportation, Distribution and Logistics career cluster.

Course Standards

PV 1: Students will demonstrate shop and tool safety.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	PV 1.1 Examine basic shop safety using Occupational Safety and Health Administration (OSHA) standards. - Summarize the proper use of Safety Data Sheets (SDS) - Create a safety portfolio - Locate the fire extinguisher, fire blankets, and emergency exits - Never have an open flame near flammable liquids - Do not refuel engine while in operation - Demonstrate proper start up and shutoff procedures (be aware of surroundings when pull-starting small gas engine (SGE)) - Wear appropriate eye and hearing protection - Wear appropriate clothing and shoe protection
Two Skill/Concept	PV 1.2 Demonstrate proper use of hand and power tools. - Perform a general tool test (name and function of tool being used, proper use of each tool, care and storage) - Review Torque wrench settings and usage - Spark test tools (Use appropriate spark tester to check spark)

PV 2: Students will demonstrate independent and teamwork skills as well as explore career opportunities within the industry.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	PV 2.1 Participate in student leadership activities.
Four Extended Thinking	PV 2.2 Utilize career guidance tools to research and report on career opportunities.
Three Strategic Thinking	PV 2.3 Develop a teamwork project.

PV 3: Students will understand and apply appropriate business practices.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	PV 3.1 Demonstrate the importance of, and the procedures for, maintaining accurate records.
Three Strategic Thinking	PV 3.2 Apply concept and application of ethical business practices.
Three Strategic Thinking	PV 3.3 Apply excellent customer relations practices.

PV 4: Students will troubleshoot an internal combustion engine.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Four	PV 4.1 Implement strategic diagnostic procedures.

Extended Thinking	
Two Skill/Concept	PV 4.2 Conduct preventative maintenance on an internal combustion engine. • Inspect and change oil and oil filter • Inspect and change air filter • Disassemble, clean, and inspect fuel pump • Disassemble, clean, and inspect carburetor
Three Strategic Thinking	PV 4.3 Analyze the functions and operations of a fuel system related to powersports vehicles. • Complete fuel pressure test of system utilizing a fuel pump • Set carburetor float height • Adjust both low and high idle circuits on carburetor engines • Complete fuel injector function test on fuel injected engines
Three Strategic Thinking	PV 4.4 Diagnose fuel system problems. • Test and determine needed repair on fuel system • Inspect and determine needed repair on air cleaner system
Three Strategic Thinking	PV 4.5 Perform fuel system service. • Remove and replace the fuel tank, fuel lines and fuel filter system • Service oil-bath or foam type air cleaner • Reassemble and adjust a carburetor • Reassemble and install fuel pump
Four Extended Thinking	PV 4.6 Analyze the function and operation of emission systems related to powersports vehicles. • Research EPA emissions standards and requirements and • Explain how emissions regulations affect the small engine service industry
Four Extended Thinking	PV 4.7 Diagnose emission systems relating to powersports vehicles.

PV 5: Students will properly test, diagnose, service, and repair charging and electrical systems.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PV 5.1 Inspect and repair battery problems. • Perform battery state-of-charge test; determine necessary action • Perform battery capacity test; confirm proper battery capacity for vehicle application; determine necessary action • Maintain or restore electronic memory functions • Inspect, clean, fill, and/or replace battery, battery cables, connectors, clamps and hold-downs • Perform battery charge • Start a vehicle using jumper cables and a battery or auxiliary power supply
Two Skill/Concept	PV 5.2 Diagnose and repair starter. • Perform starter current draw tests; determine necessary action • Perform starter circuit voltage drop tests; determine necessary action • Inspect and test starter relays and solenoids; determine necessary action • Remove and replace starter
Two Skill/Concept	PV 5.3 Diagnose and repair charging system. • Perform charging system output test; determine necessary action • Remove and replace generator (alternator)

	● Diagnose the cause of dim, or no light operation; determine necessary action ● Inspect, replace, and aim headlights and bulbs
Two Skill/Concept	PV 5.4 Understand safety aspects of supplemental restraint systems (SRS), electronic brake control systems and hybrid vehicle high voltage circuits.
Two Skill/Concept	PV 5.5 Understand and demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge [HID] lamps, ignition systems, injection systems, etc.).
Two Skill/Concept	PV 5.6 Utilize safe procedures for operating electric vehicles and systems.

PV 6: Inspect, diagnose and repair drivetrain, transmission, axles and final drive components.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PV 6.1 Demonstrate understanding of drivetrain components to include primary transmission and final drive components. ● Drain transmission fluid ● Visually inspect the amount of debris in oil pan ● Remove filter and install new filter ● Install the proper fluid to the proper level
Two Skill/Concept	PV 6.2 Diagnose and repair drive train and axles. ● Diagnose fluid loss, level, and condition concerns; determine necessary action ● Drain and fill transmission/transaxle and final drive unit ● Identify and inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; determine necessary action ● Identify and inspect hydraulic clutch slave and master cylinders, lines and hoses; determine necessary action ● Bleed clutch hydraulic system ● Inspect constant velocity (CV) joint boots ● Remove and replace rear wheel drive shaft

PV 7: Students will repair suspension and steering.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PV 7.1 Diagnose suspension and steering; determine necessary action. ● Determine proper power steering fluid types ● Flush, fill and bleed power steering system ● Diagnose power steering fluid leakage; determine necessary action. ● Lubricate suspension and steering systems ● Inspect, remove and replace shock absorbers ● Inspect and install stabilizer bar bushings, brackets, and links. ● Inspect and install strut cartridge or assembly, coil spring, insulators (silencers), and upper strut mount ● Perform pre-alignment inspection and measure vehicle ride height; determine necessary action

	● Demonstrate knowledge of the principles of steering geometry using caster, camber and toe
Two Skill/Concept	PV 7.2 Inspect and repair tire and wheel assembly. ● Diagnose tire wear patterns; determine necessary action ● Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action ● Identify vehicles equipped with a tire pressure monitoring system (TPMS) ● Demonstrate knowledge of service considerations of vehicles equipped with a TPMS ● Rotate tires according to manufacturer's recommendations ● Balance wheel and tire assembly (static and dynamic) ● Dismount, inspect, and remount tire on wheel ● Repair tire using internal patch ● Reinstall wheel; torque lug nuts

PV 8: Students will inspect, diagnose and repair brake assembly.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PV 8.1 Diagnose and repair brake fluid system. ● Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and support; determine necessary action ● Select, handle, and fill brake fluids to proper level ● Bleed brake system ● Test brake fluid for contamination; determine necessary action
Two Skill/Concept	PV 8.2 Inspect and repair brake assemblies. ● Remove, clean, inspect and measure brake drums; determine necessary action ● Refinish brake drum; measure final drum diameter ● Remove, clean, inspect brake shoes, springs, pins, clips, levers, adjuster/self-adjuster, other related brake hardware, and backing support plates; lubricate and reassemble ● Inspect and install wheel cylinders ● Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings ● Install wheel, torque lug nuts, and make final checks and adjustments
Two Skill/Concept	PV 8.3 Inspect and repair brake indicator light components. ● Check parking brake and indicator light system operation; determine necessary action ● Check operation of brake stop light system; determine necessary action ● Replace tapered roller wheel bearing and race ● Clean, inspect, lubricate, install and adjust wheel bearing ● Identify and inspect electronic brake control system components; determine necessary action ● Demonstrate knowledge of how the brake hydraulic failure warning light operates

PV 9: Students will inspect, diagnose and repair heating and air conditioning.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PV 9.1 Identify and visually inspect A/C system components. ● Locate refrigerant label and identify specified refrigerant type (e.g., R-12, R-134a) ● Conduct preliminary performance test of A/C system and determine necessary action ● Conduct performance test of the heater/ventilation system ● Inspect and replace cabin air filter

PV 10: Students will inspect, diagnose and improve engine performance.	
<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	PPV 10.1 Perform the necessary tests and repairs to improve engine performance. ● Perform engine cranking and running vacuum tests; determine necessary action ● Perform cylinder power balance test; determine necessary action ● Perform cylinder cranking compression test; determine necessary action ● Perform cylinder leakage test; determine necessary action ● Verify engine operating temperature; determine necessary action ● Retrieve and record stored diagnostic trouble codes, On-Board Diagnostics (OBD) monitor status and freeze frame data; clear codes when applicable ● Obtain and interpret scan tool data ● Remove and replace secondary ignition components ● Remove and replace thermostat and gasket/seal ● Perform common fastener and thread repair, to include: removing broken bolt, restoring internal and external threads, and repairing internal threads with a threaded insert



Small Engine Mechanics

Career Cluster	Transportation, Distribution & Logistics
Course Code	20110
Prerequisite(s)	None
Credit	0.5 or 1.0
Program of Study and Sequence	Any Foundation course – Small Engine Mechanics – Any pathway course - Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job Shadow
Industry Certifications	N/A
Dual Credit or Dual Enrollment	See: https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Automotive Technology Pathway Endorsement *Automotive Technology ; *7-12 Technology Education
Resources	N/A

Course Description

Small Engine Mechanics is an introductory course for students interested in obtaining skills needed to maintain and repair internal combustion engines used in industry, recreation, home and landscape maintenance, or personal settings. Students will study various small engine types, parts identification, and engine operation along with other systems found in small engine vehicles. Students will disassemble, inspect, reassemble and troubleshoot an internal combustion engine and look at other components of vehicles that use those engines. This course covers areas of safety, tools, and electrical theory.

Program of Study Application

Small Engine Mechanics is a cluster course within the Transportation, Distribution and Logistics career cluster.

Course Standards

SEM 1: Students will demonstrate shop and tool safety.	
<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall & Reproduction	SEM 1.1 Examine basic shop safety using Occupational Safety Health Administration (OSHA) standards, including: ● Summarize the proper use of Safety Data Sheets (SDS) ● Create a safety portfolio ● Locate the fire extinguisher, fire blankets, and emergency exits ● Never have an open flame near flammable liquids ● Do not refuel engine while in operation ● Demonstrate proper start up and shutoff procedures (be aware of surroundings when pull-starting small gas engine (SGE)) ● Eye and hearing protection ● Clothing and shoe protection
Two Skill/Concept	SEM 1.2 Demonstrate proper use of hand and power tools, including: ● Perform a general tool test (name and function of tool being used, proper use of each tool, care and storage) ● Review Torque wrench settings and usage ● Spark test tools (Use appropriate spark tester to check spark)

SEM 2: Students will demonstrate independent and teamwork skills as well as explore career opportunities within the industry.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SEM 2.1 Participate in student leadership activities.
Four Extended Thinking	SEM 2.2 Utilize career guidance tools to research and report on career opportunities.
Three Strategic Thinking	SEM 2.3 Develop a teamwork project.

SEM 3: Students will understand and apply appropriate business practices.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	IVSM 3.1 Demonstrate the importance of, and the procedures for, maintaining accurate work documents and records.
Three Strategic Thinking	IVSM 3.2 Apply concept and application of ethical business practices.
Three Strategic Thinking	IVSM 3.3 Apply excellent customer relations practices.

SEM 4: Students will apply communication, mathematics and science knowledge and skills to Small Engine Mechanics.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SEM 4.1 Determine horsepower of any small engine using $HP = W / (T * 33,000)$. (HP = Horsepower, W = Work, T = Time).

Three Strategic Thinking	SEM 4.2 Demonstrate the principle that fluids cannot be compressed by building a basic hydraulic cylinder/motor device on a test bench.
Three Strategic Thinking	SEM 4.3 Perform mathematical calculations and measurements commonly used in small engines, such as: • Calculate displacement of any given engine based on the equation $d=c*b^2s$ (c-constant 0.7584, b-bore, s-stroke, d-displacement) • Find the amount of work with the equation $w=f*d$ where w=work in lb./ft (ftlb), f=force in pounds, d=distance
Three Strategic Thinking	SEM 4.4 Communicate findings related to mathematics and science knowledge and skills to diagnosis problems in small engines.

SEM 5: Students will troubleshoot an internal combustion engine.

<i>Webb Level</i>	<i>Sub-indicator</i>
Four Extended Thinking	SEM 5.1 Implement strategic diagnostic procedures, including: • Apply small engine trouble shooting procedures • Diagnose and determine needed repair on small engine components • Determine wear on internal engine parts using specialized tools
Two Skill/Concept	SEM 5.2 Conduct preventative maintenance on an internal combustion engine. • Change oil and filter on small engine • Inspect and change air filter • Disassemble, clean, and inspect fuel pump • Disassemble, clean, and inspect carburetor
Three Strategic Thinking	SEM 5.3 Analyze the functions and operations of a fuel system related to small engine technology. • Complete fuel pressure test of system utilizing a fuel pump • Set carburetor float height • Adjust both low and high idle circuits on carburetor engines • Complete fuel injector function test on fuel injected engines
Three Strategic Thinking	SEM 5.4 Diagnose fuel system problem. • Test and determine needed repair on fuel system • Inspect and determine needed repair on air cleaner system
Three Strategic Thinking	SEM 5.5 Perform fuel system service. • Remove and replace the fuel tank, fuel lines and fuel filter system • Service oil-bath or foam type air cleaner • Reassemble and adjust a carburetor • Reassemble and install fuel pump
Four Extended Thinking	SEM 5.6 Analyze the function and operation of emission systems related to small engines. • Research EPA emissions standards and requirements and report on how those laws affect the small engine service industry
Four Extended Thinking	SEM 5.7 Diagnose emission systems relating to small engine technology. • Use an exhaust gas analyzer to determine the amount of HC and NOx emissions contained in the exhaust from a small engine and determine repair strategies • Complete electrical/electronic testing of manifold absolute pressure (MAP) sensor, O₂ (Oxygen) or throttle position sensor and determine whether repair or replacement of parts is needed

Three Strategic Thinking	SEM 5.8 Perform emission system service on small engine. ● Replace a MAP sensor ● Replace a fuel pressure sensor ● Demonstrate or observe a fuel map in electronic format
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SEM 6: Students will properly test, diagnose, service, and repair charging and electrical systems related to small engines.

<i>Webb Level</i>	<i>Sub-indicator</i>
Three Strategic Thinking	SEM 6.1 Illustrate the application of Ohm's law to charging and electrical systems related to small engines. ● Complete the start amp draw test on a small engine with an electric start system ● Compute amperage use of any circuit by using the equation amps=volts/ohms
Two Skill/Concept	SEM 6.2 Interpret schematics, diagrams, and reference information used in small engine electrical systems. ● Troubleshoot the charging circuit using a manufacturer's guide ● Read a multimeter
Three Strategic Thinking	SEM 6.3 Use strategy-based diagnostics for determining the cause of a fault in an electrical circuit. ● Test, diagnose, and service batteries and charging systems ● Test, diagnose, and service light systems ● Demonstrate the use of equipment and tools for electrical testing and diagnosis ● Troubleshoot and repair starting circuit
Two Skill/Concept	SEM 6.4 Inspect and repair battery problems. ● Perform battery state-of-charge test; determine necessary action ● Perform battery capacity test; confirm proper battery capacity for vehicle application; determine necessary action ● Maintain or restore electronic memory functions ● Inspect, clean, fill, and/or replace battery, battery cables, connectors, clamps and hold-downs ● Perform battery charge ● Start a vehicle using jumper cables and a battery or auxiliary power supply
Two Skill/Concept	SEM 6.5 Diagnose and repair starter. ● Perform starter current draw tests; determine necessary action ● Perform starter circuit voltage drop tests; determine necessary action ● Inspect and test starter relays and solenoids; determine necessary action ● Remove and replace starter
Two Skill/Concept	SEM 6.6 Diagnose and repair charging system. ● Perform charging system output test; determine necessary action ● Remove and replace generator (alternator) ● Diagnose the cause of dim or no light operation; determine necessary action ● Inspect, replace, and aim headlights and bulbs