NORTH CAROLINA
CAREER AND TECHNICAL EDUCATION ESSENTIAL STANDARDS

PUBLIC SCHOOLS OF NORTH CAROLINA
State Board of Education | Department of Public Instruction :: Career and Technical Education

2019

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For information, contact ctecurriculum@dpi.nc.gov

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INTRODUCTION

CAREER AND COLLEGE READY

The mission of Career and Technical Education (CTE) is to empower students to be successful citizens, workers, and leaders in a global economy. CTE programs are designed to contribute to the broad educational achievement of students, including basic skills, as well as their ability to work independently and as part of a team, think creatively and solve problems, and utilize technology in the thinking and problem-solving process.

Career and Technical Education fulfills an increasingly significant role in school reform efforts. Students who concentrate in a CTE area, earning at least four related technical credits and meeting other criteria, are better prepared for the further education and advanced training required to be successful in 21st century careers. Career and Technical Educators at the state and local levels partner with business and industry and with community colleges and other postsecondary institutions to ensure Career and Technical Education serves the needs of individual students and of the state.

The federal Carl Perkins Career and Technical Education Act of 2006 provides the framework for Career and Technical Education. North Carolina's Five-Year Plan for Career and Technical Education specifies how Career and Technical Education programs will be carried out in the state. Additional information about planning for Career and Technical Education is found in the CTE Planning Guide.

ESSENTIAL STANDARDS

The 2019 CTE Essential Standards document was approved by the North Carolina State Board of Education in November 2018 and goes into effect for the 2019-20 academic year. The document contains program area and course descriptions and links to essential standards by course. This information was previously part of the Career and Technical Education Standard Course of Study Guide, but has been revised as part of the North Carolina Department of Public Instruction Accountability and Curriculum Reform Effort and emphasis on Essential Standards. Local Education Agency (LEA) CTE administrators work with individual schools to select appropriate courses from among those in this document.

Each year the NC Department of Public Instruction publishes the Status of Curriculum Materials, lists the date for the latest version of each course and each supporting blueprint and curriculum, and the source of assessments used with courses in the Essential Standards.

Career and Technical Education in the North Carolina Department of Public Instruction is responsible for managing courses in the Essential Standards. Four types of courses are available.

1. **Courses Developed by the Department of Public Instruction**
   Courses developed by the state are designed to aligned with program area national standards and meet the needs/standards of business and industry. They include a blueprint of essential standards, supporting objectives, and relative objective weights. These courses provide a curriculum product and aligned assessments. All products developed since 2006 are aligned using the Revised Bloom's Taxonomy.
2. **Courses Adapted by the Department of Public Instruction**
   In some cases, curriculum is available from multiple vendors and a blueprint is needed to direct the learning of students. An Adapted Course Blueprint is developed with essential standards, indicators, and relative essential standard weights. This type of blueprint is often used when an industry credential is available for the course.

3. **Courses Using Adopted Curriculum**
   In some cases, a sole source is recognized as a provider of curriculum in a specialty area, and the course is adopted fully from a third-party vendor. Materials for these courses are usually purchased by the LEA and typically include assessments.
4. **Courses Approved as Local Course Options**
   If a LEA recognizes needs that are not addressed by courses in the Essential Standards, that LEA can request authorization to offer a Local Course Option. A Local Course Option requires considerable planning and preparation. Each local course must be approved before it is advertised and offered to students. More information about Local Course Options appears in Appendix A.

CAREER CLUSTERS™ AND PROGRAMS OF STUDY

Career Clusters™ are broad groupings of occupations/career specialties, organized by common knowledge and skills required for career success. There are 16 Career Clusters™ and 79 related pathways (subgroupings of occupations/career specialties). Supported by the 2006 Perkins legislation, Career Clusters™ are an organizing tool for curriculum design, school guidance, and a framework for seamless transition to career and college.

All NC CTE courses align to the Career Clusters™. Each course is placed in a Career Cluster based on a set of knowledge and skills common to all careers in the entire Career Cluster. Industry-validated knowledge and skills statements of student expectations identify what the student should know and be able to do. They prepare students for success in a broad range of occupations/career specialties. Some CTE courses cross over all 16 Career Clusters™. The 16 Career Clusters™ are:

- Agriculture, Food & Natural Resources
- Architecture &Construction
- Arts, A/V Technology & Communications
- Business Management & Administration
- Education &Training
- Finance
- Government & Public Administration
- Health Science
- Hospitality & Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections & Security
- Manufacturing
- Marketing
- Science, Technology, Engineering & Mathematics
- Transportation, Distribution & Logistics

Federal law requires each school receiving Perkins funds to offer at least one Program of Study (POS). A Program of Study provides a clear pathway for students to reach their career goals through secondary CTE courses, opportunities for postsecondary credit while in high school, and academic coursework, combined with a smooth transition to postsecondary education and advanced training. Students are to have a career development plan outlining courses to be taken that will move them toward their tentative career objective, meet high school graduation requirements, and provide a foundation for further education and advanced training.

WORK-BASED LEARNING OPPORTUNITIES

All career and technical education courses in North Carolina offer work-based learning opportunities for students. Course recommendations for work-based learning opportunities are highlighted at the bottom of each of the course descriptions.

- **Apprenticeship:** a system of skilled occupational training that combines practical work experiences with related academic and technical instruction.
- **Business and Industry Field Trip:** a short-term visit to a business or agency expands the learning opportunities for participating students.
- **Cooperative Education:** a method of instruction where technical classroom instruction is combined with paid employment that is directly related to the classroom instruction.
- **Entrepreneurial Experiences:** involves students developing knowledge and proficiency in running a business. Students gains work-place skills and develops and understanding of how to actually manage a business and is responsible for all risks.
- **Internship:** a work-based learning experience where a student participates in the daily operations of a work site under the direct supervision of a business mentor.
- **Job Shadow:** a short-term (usually a half day) educational experience that introduces a student to a particular job or career by pairing the student with an employee of a business, industry, or agency.
- **Mentorship:** involves pairing a student (mentee or protégé) with a community professional (mentor) in a one-to-one relationship with the intent of providing first-hand experience in a career field/cluster of the student's choice.
- **School Based Enterprise:** a simulated or actual business conducted by a school that creates a student learning experience that creates direct links between the classroom learning and the world of work.
- **Service Learning:** a work-based learning strategy that combines community service with career and technical learning goals. Students provide volunteer service to public and non-profit agencies, as well as to civic, charitable, and governmental organizations in the local community.

For more details on the work-based learning opportunities summarized above, please view the "Guide to Work-Based Learning in North Carolina" Toolkit found at:
http://www.ncpublicschools.org/docs/cte/curriculum/work-based/wbl-toolkit.pdf

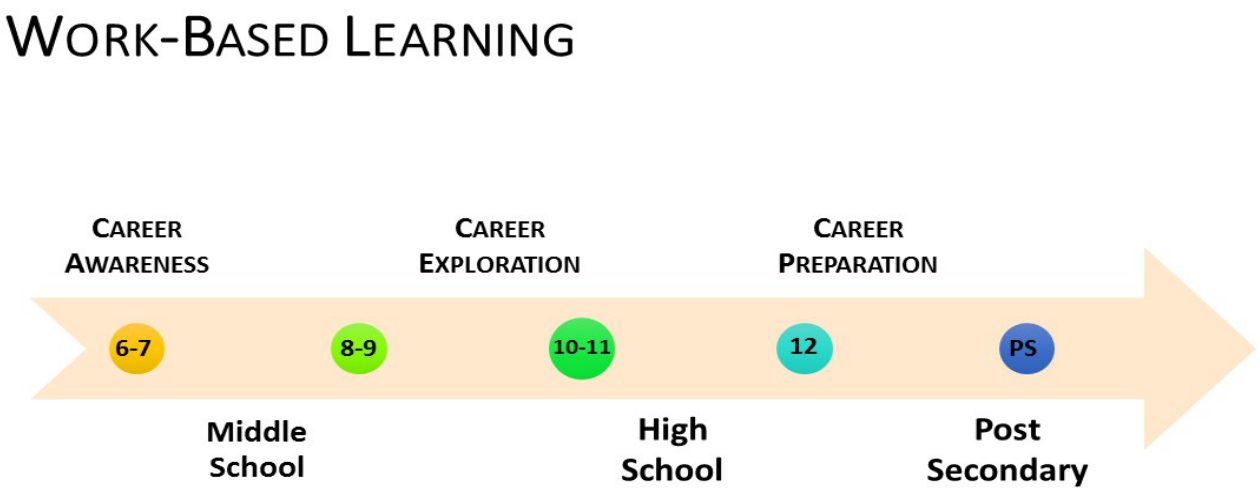
WORK-BASED LEARNING IMPLENTATION

Building the bridge for work-based learning and the various pathways for career success involves many facets for many stakeholders. As we build a useable, interactive roadmap, and guide for our youth, it is the primary goal of the Work-Based Learning Toolkit is to help all stakeholders; educators, parents, students, business and industry to have resources and tools that are easily navigated and understandable.

The first steps to understanding work-based learning and the many career pathways is to understand how important each aspect of career development is for the stakeholder involved at that precise periods of time of career awareness, exploration, and preparation.

Work-Based Learning is an integral part of all Career and Technical courses in North Carolina to show curricular relevance to industry trends. The following Work-Based Learning continuum offers the opportunity for students in middle through high school to experience the implementation of work-based learning in a variety of settings. These settings including:

- Career Awareness in grades 6-7
- Career Exploration in grades 8-11
- Career Preparation in grades 12 and post-secondary



CAREER AWARENESS

Students will begin to understand how school relates to the "world of work" through businesses, parents, and adults who "share and tell" their story about their profession and why they love their job.

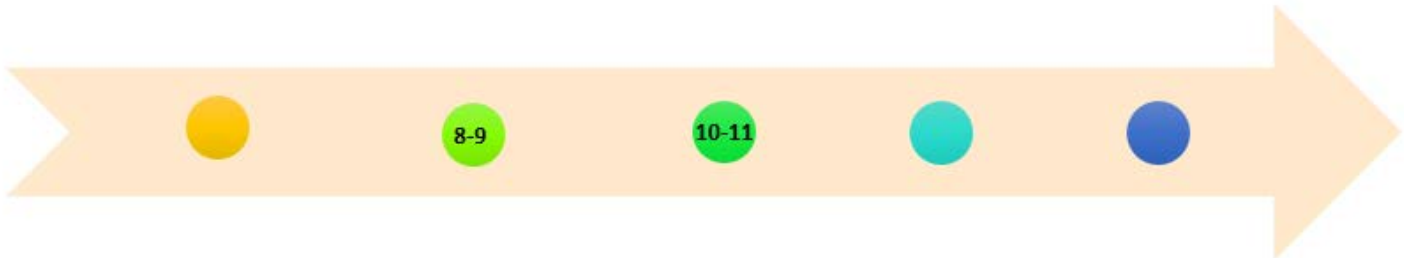
During career awareness, middle school students will be given the opportunity to:

- ✓ Understand how school relates to the world of work.
- ✓ Become aware of different careers and career pathways.
- ✓ Experience field trips to various businesses and industries.
- ✓ Participate in community volunteer organizations and service learning projects.
- ✓ Embrace classroom assignments and project based learning around specific industries.
- ✓ Become involved in school based business entrepreneurship projects.
- ✓ Hear guest speakers from industry experts.
- ✓ Visit theme specific high schools that are of interest to them via class tours and open houses.

The Students@Work is a project of the North Carolina Business Committee for Education in partnership with the North Carolina Department of Public Instruction. The goal is for North Carolina businesses to help middle school students in their community see the opportunities that exist in the workplace. Other opportunities for developing career awareness:

- Job Shadowing
- Classroom visits
- Field trips to various business and industry
- Assignments aligned with career exploration and discovery
- Parent/child day

CAREER EXPLORATION

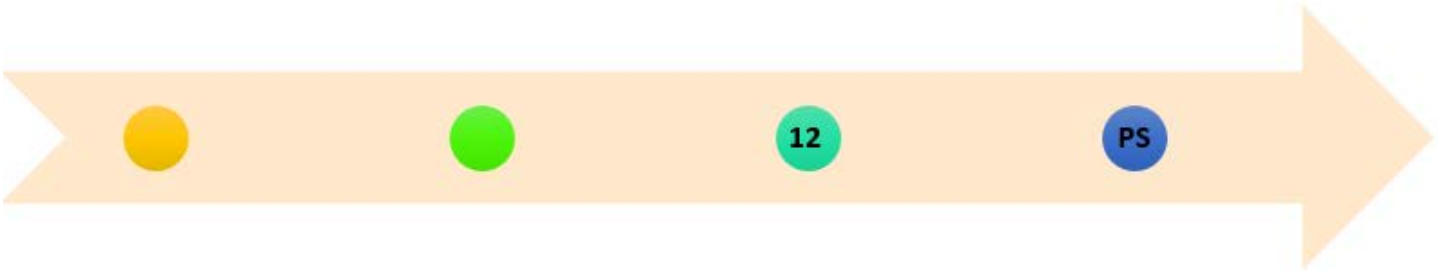


Students will develop an in depth understanding of the working world with an understanding of the importance of career discovery. Course work and project based learning support discovery of various careers in numerous occupations as well as the needed educational foundation and prerequisites needed to be successful in a specific career pathway.

During career exploration, middle and high school students (8-11) will:

- ✓ Understand how school relates to the world of work.
- ✓ Research and design a career interest.
- ✓ Take an inventory assessment to help align specific educational courses and career goals.
- ✓ Develop an understanding of various occupations within a specific career theme/pathway.
- ✓ Become aware of how specific skills are needed to be successful in the work world.
- ✓ Research, design and develop a plan for post-secondary training and education for a specific career pathway.

CAREER PREPARATION



Students will develop and possess the needed skills for college and career readiness via classroom academic and work- based skills needed in the world. Students will develop soft skills, relationship building tools, team work development, successful communication and business attributes sought from employers.

During career preparation, high school students (12 to post-secondary) will:

- ✓ Develop needed skill building aptitudes sought from all employers.
- ✓ Know and understand the function and the skills needed to be successful in a specific career.
- ✓ Be able to seek resources to find a specific career/job.
- ✓ Have the core knowledge to be successful in a particular career pathway.
- ✓ Understand and possess the appropriate work attitude, characteristics and professionalism needed for a successful work placement.
- ✓ Develop an understanding of various occupations within a specific career theme/pathway.
- ✓ Become aware of how specific skills are needed to be successful in the work world.
- ✓ Research and design a career interest inventory that will help align their courses and career goals.
- ✓ Develop career and educational goals that align with their selected career pathway.
- ✓ Follow and utilize post-secondary training opportunities and education to design their own career pathway
- ✓ Apply for a specific job or work-based learning experience via employment protocol methods utilizing the following: cover letters, resumes, interviewing skills, application forms, and thank you/follow-up letters.

For more information on CTE Work-Based Learning in North Carolina, please visit:
http://www.dpi.state.nc.us/cte/curriculum/work-based/

AGRICULTURAL EDUCATION

PROGRAM DESCRIPTION

Agricultural Education is a systematic program of instruction available to students desiring to learn about the science, business, technology of plant and animal production, and/or about the environmental and natural resources systems.

Agricultural Education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources systems. Agricultural Education prepares students for more than 300 careers in the agricultural industry including production, financing, processing, marketing, and distribution of agricultural products. Agricultural Education develops leaders for the vast network of supporting careers that provide the supplies, services, management, and conservation of our natural resource systems.

The Agricultural Education program is built on the three core areas of classroom and laboratory instruction, supervised agricultural experience programs, and FFA student organization activities. The quality Agricultural Education program is designed for delivery through a balance of these three core educational strategies:

- Classroom/Laboratory Instruction – Quality instruction in and about agriculture that utilizes a "learning by doing" philosophy. Agricultural Education is an applied science that incorporates math, reading, social studies, and physical, chemical and biological sciences into each course.
- Supervised Agricultural Experience (SAE) Programs – Students put knowledge and theory to use through relevant, experiential, agricultural learning projects. While completing SAE projects, students learn to apply the concepts and principles taught in their agriculture classes to real-world problems and scenarios.
- FFA Student Organization Opportunities – FFA activities are an integral part of the Agricultural Education program in which students experience numerous opportunities for developing premier leadership, personal growth, and career success.

The major program outcomes for students enrolled in an Agricultural Education program are:

- Opportunity to explore career options available in agriculture-related fields and to assist them in planning for a future career.
- Technical skills training for success in an agriculture-related career.
- Connectivity of school-based instruction with work-based learning.
- Leadership and personal development training needed to succeed in an agriculture-related career including teamwork, problem solving, and communications.
- Competitive advantage for students to succeed in an international economy.
- Commitment to community development and service through projects that require interaction with parents, agribusiness leaders, and other community organizations.
- Development of skills necessary for lifelong learning in agriculture leading to career advancement and success.

NATIONAL STANDARDS

Agricultural Education curriculum is designed to reflect national standards in:

- National Agriculture, Food and Natural Resources Career Cluster Content Standards
- National Quality Program Standards for Agriculture, Food and Natural Resources Education

CAREER CLUSTER ALIGNMENT

Agricultural Education includes curriculum offerings for students in grades 7 through 12. Agricultural Education is designed to provide students with appropriate, comprehensive preparation for career and postsecondary education in the Agriculture, Food and Natural Resources Career Cluster. All Agricultural Education courses are contained in the following five career pathways.

- Agribusiness Systems
- Animal Systems
- Biotechnology Research and Development
- Food Products and Processing Systems
- Natural Resources Systems
- Plant Systems
- Power, Structural and Technical Systems

CERTIFICATIONS AND CREDENTIALING

Currently there are eleven credentials and certification that are obtainable through agricultural education instruction.

CAREER AND TECHNICAL STUDENT ORGANIZATION- FFA

The FFA is a national organization of Agricultural Education students. FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. The opportunities that are available for FFA members include:

- Career Development Events – FFA members earn recognition by utilizing their classroom and laboratory knowledge in team and individual events.
- Degree Programs – FFA members advance in the organization by meeting rigorous standards to obtain degrees.
- Proficiency Awards – Members are recognized for success in their respective Supervised Agricultural Experience Program.
- Scholarships – FFA awards students over $2 million annually in college scholarships.
- Personal Growth Conferences – Teamwork and personal growth conferences are held each summer at the North Carolina FFA Center
- Leadership Conferences and Conventions – FFA conducts events throughout the year that promote premier leadership, personal growth and career success.
- Service Activities – Students are engaged in numerous projects and activities to serve communities throughout North Carolina.

For more information on FFA opportunities, visit the following web sites.

North Carolina FFA Web Site: www.ncffa.org
National FFA Web Site: www.ffa.org/home

Agricultural Mechanics I

Course Number: AS31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: OSHA 10-Hour General Industry (Agriculture) Certification
Certified Welders for WeldingCode AWS D.1. – 2010
National Safe Tractor and Machinery Operation Certification

Description: This course develops knowledge and technical skills in the broad field of agricultural machinery, equipment, and structures. The primary purpose of this course is to prepare students to handle the day-to-day problems and repair needs they will encounter in their chosen agricultural career. Topics include agricultural mechanics safety, agricultural engineering career opportunities, hand/power tool use and selection, electrical wiring, fencing, paints and preservatives, basic metal working, basic agricultural construction skills related to plumbing, carpentry, basic welding, and leadership development. English language arts, mathematics, and science are reinforced.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Agricultural Mechanics II

Course Number: AS32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AS31 Agricultural Mechanics I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: OSHA 10-Hour General Industry (Agriculture) Certification
Certified Welders for WeldingCode AWS D.1. – 2010
National Safe Tractor and Machinery Operation Certification

Description: In this course, the topics of instruction emphasized are non-metallic agricultural fabrication techniques, metal fabrication technology, safe tool and equipment use, human resource development, hot/cold metal working skills and technology, advanced welding and metal cutting skills, working with plastics, plumbing, concrete and masonry, agricultural power and advanced career exploration/decision making. English language arts, mathematics, and science are reinforced.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Agricultural Mechanics II-Small Engines

Course Number: AS33

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AS31 Agricultural Mechanics I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: Master Service Technician with Briggs and Stratton

Description: This course is provided for the upper-level agricultural mechanics student who wishes to apply the basic knowledge of small engines acquired through on-line Briggs and Stratton training modules delivered by the agricultural education teacher in a shop setting. The course is intended to provide students with experiential learning opportunities as they perform "hands-on" skills specified in the curriculum under the direct supervision of the agriculture teacher. This "learning to do" philosophy will enable students to understand curriculum content so that they may pass the Briggs and Stratton Competency Exam and receive certification from Briggs and Stratton. English, language arts, mathematics, and science are reinforced.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Agriscience Applications

Course Number: AU10

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: NC Hunter Safety Course
National Safe Tractor and Machinery Operation Certification
Certified Welders for WeldingCode AWS D.1. – 2010

Description: This course focuses on integrating biological/physical sciences with technology as related to the environment, natural resources, food production, science, and agribusiness. Topics of instruction include agricultural awareness and literacy, employability skills and introduction to all aspects of the total agricultural industry. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Animal Science I

Course Number: AA21

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: NC Beef Quality Assurance
NC Pork Quality Assurance & Certification

Description: This course focuses on the basic scientific principles and processes that are involved in animal physiology, breeding, nutrition, and care in preparation for an animal science career major. Topics include animal diseases, introduction to animal science, animal nutrition, animal science issues, career opportunities, and animal evaluation. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Animal Science II

Course Number: AA22

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AA21 Animal Science I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: NC Beef Quality Assurance
NC Pork Quality Assurance & Certification
NCDENR Animal Waste Certification

Description: This course includes more advanced scientific principles and communication skills and includes animal waste management, animal science economics, decision making, and global concerns in the industry, genetics, and breeding. English language arts, mathematics, and science are reinforced in this class.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Animal Science II – Small Animal

Course Number: AA23

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AA21 Animal Science I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course provides instruction on animal science topics related to small animals that are served by a veterinarian. Content related to the breeding, grooming, care and marketing of animals that fit into this category are taught in this course. English language arts, mathematics, and science are reinforced in this class.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Equine Science I

Course Number: AA31

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course focuses on the basic scientific principles and processes related to equine physiology, breeding, nutrition, and care in preparation for a career in the equine industry. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Equine Science II

Course Number: AA32

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AA31 Equine Science I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: The course focuses on more advanced applications of feeding, breeding, and management practices involved in the horse industry. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Exploring Agricultural Science

Course Number: AU02

Recommended Maximum Enrollment: 25

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This middle school course introduces students to the industry of agriculture. Topics of instruction include animal science, agricultural science and technology, plant science, agricultural issues, natural resources, food science, stewardship, consumer agriculture, and careers in agricultural science. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Exploring Biotechnology in Agriculture

Course Number: AU01

Recommended Maximum Enrollment: 30

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This middle school course focuses on the agricultural and medical industry with emphasis on the relationship of science and technology that affects agriculture, medicine, and health care. Topics include career concepts in the agriculture and medical fields. English language arts, mathematics, and science are reinforced. This course contributes to the development of a career development plan.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Horticulture I

Course Number: AP41

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: North Carolina Certified Plant Professional (CPP)
Certified Young Plant Professional (CYPP)
NC Private Pesticide Applicator

Description: This course provides instruction on the broad field of horticulture with emphasis on the scientific and technical knowledge for a career in horticulture. Topics in this course include plant growth and development, plant nutrition, media selection, basic plant identification, pest management, chemical disposal, customer relations, and career opportunities. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Horticulture II

Course Number: AP42

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AP41 (6841) Horticulture I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: North Carolina Certified Plant Professional (CPP)
Certified Young Plant Professional (CYPP)
NC Private Pesticide Applicator

Description: This course covers instruction that expands scientific knowledge and skills to include more advanced scientific computations and communication skills needed in the horticulture industry. Topics include greenhouse plant production and management, bedding plant production, watering systems, light effects, basic landscape design, installation and maintenance, lawn and turf grass management, and personal development. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Horticulture II- Landscaping

Course Number: AP44

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AP41 (6841) Horticulture I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: North Carolina Certified Plant Professional (CPP)
Certified Young Plant Professional (CYPP)

Description: This course provides hands-on instruction and emphasizes safety skills needed by landscape technicians in the field. Students are instructed in interpreting landscape designs, identifying landscape plants, and planting/maintaining trees, shrubs, and turf. Landscape construction is emphasized in the areas of grading and drainage, irrigation, paver installation, and the use/maintenance of landscape equipment. Current topics discussions provide students an understanding of careers and the employability skills needed to enter the landscape industry. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Horticulture II- Turfgrass Management

Course Number: AP43

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AP41 (6841) Horticulture I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course provides hands-on instruction and emphasizes eight units of instruction including fundamentals of soils and pests, environmental issues related to turf management, landscape basics, lawn care and turf production, golf course management, sports turf and turf irrigation, turf equipment and maintenance, and human resources and financial management. Safety skills will be emphasized. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Natural Resources I

Course Number: AN51

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: NC Hunter Safety Course

Description: This course provides an introduction to environmental studies, which includes topics of instruction in renewable and non-renewable natural resources, history of the environment, personal development, water and air quality, waste management, land use regulations, soils, meteorology, fisheries, forestry, and wildlife habitat. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Natural Resources II

Course Number: AN52

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: AN51 Environmental & Natural Resources I

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: NC Hunter Safety Course

Description: This course covers instruction in best management practices in methods of environmental monitoring and conservation, air and water regulations, sampling methodologies, prescribing conservation techniques, and wildlife and forestry management. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Sustainable Agriculture Production I

Course Number: AU21

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course focuses on the increasingly complex world of producing enough food and fiber to meet the growing world demand and at the same time maintain ecological balance and conserve our natural resources. Students will explore implementing environmentally sound practices in agricultural production to satisfy the needs of a growing population for today and tomorrow. A breadth of topics including: crop and animal production, natural resource management, agroforestry, food safety, and the farm to fork continuum will set the educational stage for this course. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Sustainable Agriculture Production II

Course Number: AU22

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course expands on the complexity of producing enough food and fiber to meet the world demand and at the same time maintain an economical balance and conserve our natural resources. Students will explore the U.S. food system and how agriculture impacts the quality of life at all levels as well as the energy resources necessary to meet these needs. Twenty first century topics such as precision agriculture, biotechnology, bioinformatics, plant and animal breeding, apiculture, aquaponics, hydroponics, vermicomposting and food safety will be explored as to their role in a sustainable society. Students will discuss marketing strategies for agricultural products and develop a business plan for a sustainable grower. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Veterinary Assisting

Course Number: AA41

Recommended Maximum Enrollment: 15

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Animal Science II or Animal Science II - Small Animals (Designed for 11th or 12th grade students with an interest in animal medicine)

Aligned Career Technical Student Organization: National FFA Organization (FFA)

Aligned Industry Credential: None

Description: This course provides instruction for students desiring a career in animal medicine. Topics include proper veterinary practice management and client relations, pharmacy and laboratory procedure, advanced animal care, and surgical/radiological procedures. Applied mathematics, science and writing are integrated throughout the curriculum. Advanced FFA leadership will be infused throughout the curriculum to develop the student's ability to work with the public. All aspects of this course will feature hands-on skill sets designed to enhance experiential learning. English language arts, mathematics, and science are reinforced. Work-based learning strategies appropriate for this course are cooperative education, internship, mentorship, service learning job shadowing and supervised agricultural experience. FFA competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skill through authentic experiences. Students who wish to take the Veterinary Assisting Exam developed by Texas Veterinary Medical Association to be a Certified Veterinary Assistant (CVA) Level 1 should complete an additional 500 hours of supervised agricultural experience (SAE) during their three animal science courses. Two hundred SAE hours focus on the care and management of animals; will be substantiated by records, and conducted under the direct supervision of the agricultural teacher. Hours may be earned any time during the year including summer months. An additional 300 hours of supervised agricultural experience (worked based learning) will be conducted as an internship program in animal medicine under the supervision of a licensed veterinarian or certified veterinary technician who will attest that participating students have mastered a standard set of skills used in animal medicine as identified by the cooperating teacher. Hours may be earned any time during the year including summer months.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

BUSINESS, FINANCE, AND INFORMATION TECHNOLOGY EDUCATION

PROGRAM DESCRIPTION

The Business, Finance, and Information Technology Education (BFIT) program is designed to prepare students as viable competitors in the national and global business landscape while providing advanced educational opportunities that reflect real-world challenges and problem-solving techniques. It provides broad, comprehensive curriculum at the middle and high school levels that provides students with meaningful instruction for and about business, finance, and information technology. The instructional program begins in the middle grades by offering exploratory experiences in the development of proficiency in basic computer software applications, business acumen, computer science basics, entrepreneurship and marketing concepts. This experience continues at the high school level with courses designed for mastering the required knowledge and skills to complete a variety of career pathways in the Business Management and Administration, Finance, and Information Technology Education Career Clusters™.

Business, Finance, and Information Technology Education empowers students to use business principles and concepts while managing their current and future responsibilities as informed consumers and productive workers in the 21st century. Literacy and numeracy skills are an integral part of the program. Development of employer required soft skills including collaboration, computational and critical thinking, economic literacy, entrepreneurial skills, and problem-solving is embedded in the curriculum for each of the career pathways. Integration of the Business, Finance, and Information Technology Education program with appropriate academic concepts and courses is strongly encouraged.

NATIONAL STANDARDS

Business, Finance, and Information Technology Education curriculum is designed to reflect national standards in

- Business Education
  - National Business Education Association http://www.nbea.org
  - MBA Research http://www.mbaresearch.org
- Career Clusters™ http://careertech.org/career-clusters
- Consortium for Entrepreneurship Education http://www.entre-ed.org/_teach/activits.htm
- Council on Economic Education http://councilforeconed.org
- IT and Computer Science Education http://www.csteachers.org

CAREER CLUSTER ALIGNMENT

The Business, Finance, and Information Technology Education program is designed to provide students with appropriate, comprehensive preparation for careers and postsecondary education in the following Career Clusters™.

- Business, Management, and Administration
- Finance
- Information Technology

CERTIFICATIONS AND CREDENTIALING

To reinforce the attainment of the State Board of Education goal that every student in the NC Public School System graduates from high school prepared for work, further education, and citizenship, Business, Finance, and Information Technology Education courses provide multiple opportunities to obtain industry credentials, which is one measure of accountability for this goal. Students may earn a variety of industry credentials ranging from Financial Literacy certifications, CISCO Certified Entry Networking Technician, CompTIA A+, Microsoft Office Specialist to Microsoft Technology Associate.

FUTURE BUSINESS LEADERS OF AMERICA (FBLA)

Opportunities to develop and apply leadership, social, civic, and business-related skills are provided through Future Business Leaders of America (FBLA), the Career Technical Student Organization for Business, Finance, and Information Technology Education students. Future Business Leaders of America is a nonprofit 501(c)(3) education association with a quarter-million student preparing for careers in business and business-related fields. The association has four divisions:

- FBLA-Middle Level for junior high, middle, and intermediate school students
- Future Business Leaders of America (FBLA) for high school students
- Phi Beta Lambda (PBL) for postsecondary students
- Professional Division for business people, FBLA-PBL alumni, educators, and parents who support the goals of the association

FBLA is organized on local, state, and national levels. Business teachers, advisers, and advisory councils (including school officials, business people, and community representatives) guide local chapters. State advisers and committee members coordinate chapter activities for the national organization. FBLA is one of the largest business career student organization in the world.

The mission of NC FBLA is to help build and sustain Business, Finance, and Information Technology Education programs of excellence to serve our communities, state, and nation. It provides students with leadership opportunities at the local, regional, and state levels. Student FBLA members may seek elected office or serve in positions of committee leadership. Students gain valuable hands-on, authentic leadership skills by taking an active part in the student-led organization.

NC FBLA is an integral part of North Carolina's Business, Finance, and Information Technology Education program. The experiences that FBLA members receive are directly related to their classroom instruction. Participation in FBLA provides students with the critical soft-skill development that is essential for the 21st century employee. Members are provided with the opportunity to compete with other FBLA members across the nation.

North Carolina FBLA Web Site: http://ncfbla.org
National FBLA Web Site: http://www.fbla-pbl.org

Accounting I

Course Number: BA10

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Intuit QuickBooks Certified User

Description: This course is designed to help students understand the basic principles of the accounting cycle. Emphasis is placed on the analysis and recording of business transactions, preparation, and interpretation of financial statements, accounting systems, banking and payroll activities, basic types of business ownership, and an accounting career orientation. Mathematics is reinforced and entrepreneurial experiences are encouraged.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Accounting II

Course Number: BA20

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BA10 Accounting I

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Intuit QuickBooks Certified User

Description: This course is designed to provide students with an opportunity to develop in-depth knowledge of accounting procedures and techniques utilized in solving business problems and making financial decisions. Emphasis includes departmental accounting, corporate accounting, cost accounting, and inventory control systems, managerial accounting and budgeting, and further enhancement of accounting skills. Mathematics is reinforced and entrepreneurial experiences are encouraged.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Business Financial Planning

Course Number: BF20

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BF10 Principles of Business and Finance

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course expands student understanding of finance as it is impacted by globalization, convergence and consolidation, technological innovation, and increased regulation. Accounting and financial services including banking, insurance, and securities and investments are emphasized throughout the course. English language arts and mathematics are reinforced. Entrepreneurial experiences are encouraged.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Business Law

Course Number: BB30

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BF10 Principles of Business and Finance

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course is designed to acquaint students with the basic legal principles common to all aspects of business and personal law. Business topics include contract law, business ownership including intellectual property, financial law, and national and international laws. Personal topics include marriage and divorce law, purchasing appropriate insurance, renting and owning real estate, employment law, and consumer protection laws. Social studies and English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Business Management

Course Number: BB40

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BF10 Principles of Business and Finance

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course expands student understanding of management, including management of information, knowledge, customer relationships, human resources, product-development, projects, quality and strategies. Economics, finance, and professional development are also stressed throughout the course. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Cisco Network Engineering Technology I

Course Number: II11

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA; Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course introduces the architecture, structure, functions, components, and models of the internet and other computer networks. The principles and structure of IP addressing and the fundamentals of ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. This course uses the Cisco Introduction to Networks curriculum and must be conducted using the Cisco Networking Academy connection. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Cisco Network Engineering Technology II

Course Number: II12

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: II11 Cisco Network Engineering Technology I

Aligned Career Technical Student Organization: SkillsUSA; Future Business Leaders of America (FBLA)

Aligned Industry Credential: Cisco Certified Entry Networking Technician (CCENT)
Microsoft MTA 98-366 (Networking Fundamentals)

Description: This course describes the architecture, components, and operations of routers and switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. This course uses the Cisco Routing & Switching Essentials curriculum and must be conducted using the Cisco Networking Academy connection. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Computer Engineering Technology I

Course Number: II21

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA; Future Business Leaders of America (FBLA)

Aligned Industry Credential: CompTIA A+ 901
Microsoft MTA 98-366 (Networking Fundamentals)

Description: This course is the first in a two course series that introduces the skills required for entry level PC technicians. It includes objectives in the following four domains, a) PC Hardware, b) Networking c) Mobile devices d) Hardware and networking troubleshooting. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Computer Engineering Technology II

Course Number: II22

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: II21 Computer Engineering Technology I

Aligned Career Technical Student Organization: SkillsUSA; Future Business Leaders of America (FBLA)

Aligned Industry Credential: CompTIA A+ 902

Description: This course is the second in a two course series that introduces the skills required for entry level PC technicians. It includes objectives in the following five domains, a) Windows operating system, b) Other operating systems and technologies c) Security, d) Software troubleshooting, e) Operational procedures. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Computer Programming I

Course Number: BP10

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course is designed to introduce the concepts of programming, application development, and writing software solutions in the Visual Studio environment. Emphasis is placed on the software development process, principles of user interface design, and the writing of a complete Visual Basic program including obtaining and validating user input, logical decision making and processing, graphics, and useful output. Mathematics is reinforced and entrepreneurial experiences are encouraged.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Computer Programming II

Course Number: BP12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BP10 Computer Programming I

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course is designed to teach students advanced programming concepts, including class structures, multimedia programming, advanced arrays, and file structure. Mathematics is reinforced and entrepreneurial experiences are encouraged.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Computer Skills and Applications

Course Number: BU10

Recommended Maximum Enrollment: 25

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This middle school course is composed of four instructional modules designed to provide hands-on instruction in basic keyboarding skills, computer concepts, software applications, and digital literacy. The software applications include word processing, desktop publishing, presentation software, spreadsheets, and databases. English language arts and mathematics are reinforced. Courselets include:

BU102YA Keyboarding and Basic Word Processing
BU102YB Introduction to Office Productivity
BU102YC Office Productivity Applications
BU102YD Digital Literacy

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

E-Commerce I

Course Number: BD12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BD10 Multimedia and Webpage Design

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course is designed to help students master skills in the design and construction of complex websites for conducting business electronically. Emphasis is on skill development in advanced web page construction and entrepreneurial applications of conducting business electronically as well as economic, social, legal, and ethical issues related to electronic business. Students learn through project-based applications as they plan, design, create, publish, maintain, and promote an e-commerce website. Art is reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Entrepreneurship I

Course Number: ME11

Please refer to the Marketing and Entrepreneurship Education program area for the full course description.

Entrepreneurship II

Course Number: ME12

Please refer to the Marketing and Entrepreneurship Education program area for the full course description.

Exploring Business, Marketing, and Entrepreneurship

Course Number: BU20

Recommended Maximum Enrollment: 25

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This middle school course is composed of modules designed to explore the nature of business in an international economy and to study related careers in fields such as entrepreneurship, financial services, information technology, marketing, office systems technology, public relations and promotion, and travel and tourism. Emphasis is on using the computer while studying applications in these careers along with problem solving and thinking skills. This course contributes to the development of a career development plan. English language arts, mathematics, and social studies are reinforced. Courselets include:

BU202YA Exploring Business and Entrepreneurship
BU202YB Exploring Economic Systems
BU202YC Exploring Business Activities
BU202YD Exploring Business Procedures and Leadership

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Foundations of Information Technology

Course Number: BI10

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential:

Description: This introductory course provides students with the foundation to pursue further study in information technology. Emphasis is on network systems, information support and services, programming and software development, and interactive media. Mathematics is reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Microsoft Excel

Course Number: BM20

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Microsoft Office Specialist (MOS) in 77-727: Excel: Core Data Analysis, Manipulation, and Presentation and 77-728: Excel Expert: Interpreting Data for Insights

Description: Students in the Microsoft Imagine Academy benefit from world-class Microsoft curriculum and cutting-edge software tools to tackle real-world challenges in the classroom environment. This class is designed to prepare students for successful completion of the Microsoft Office Specialist Excel Core and Excel Expert exams. Successful candidates for the Microsoft Office Specialist Excel certification exam will have a fundamental understanding of the Excel environment and the ability to complete tasks independently. They will know and demonstrate the correct application of the principle features of Excel. Candidates create and edit a workbook with multiple sheets and use a graphic element to represent data visually. Workbook examples include professional-looking budgets, financial statements, team performance charts, sales invoices, and data-entry logs. Expert-level candidates for the Excel exam have an advanced understanding of the Excel environment and have the ability to guide others to the proper use of the program's features.
They create, manage, and distribute professional spreadsheets for a variety of specialized purposes and situations. They customize their Excel environments to meet project needs and to enhance productivity. Expert workbook examples include custom business templates, multiple-axis financial charts, amortization tables, and inventory schedules. Career possibilities may include accountants, financial analysts, data analysts, commercial bankers, and others.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Microsoft Word and PowerPoint

Course Number: BM10

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Microsoft Office Specialist (MOS) in Word and/or PowerPoint

Description: Students in the Microsoft Imagine Academy benefit from world-class Microsoft curriculum and software tools to tackle real-world challenges in the classroom environment. In the first part, students will learn to use the current version of Microsoft Word interface, commands, and features to create, enhance, customize, share and create complex documents, and publish them. In the second part, students will learn to use the current version of Microsoft PowerPoint interface, commands, and features to create, enhance, customize, and deliver presentations. Art and English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Multimedia and Webpage Design

Course Number: BD10

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BM10 Microsoft Word and PowerPoint

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course focuses on desktop publishing, graphic image design, computer animation, multimedia production, and webpage design. Communication skills and critical thinking are reinforced through software applications. English language arts and arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Network Administration I

Course Number: BN20

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Microsoft MTA 98-349 Operating Systems Fundamentals
Microsoft MTA 98-366 Networking
Microsoft MTA 98-367 Security Fundamentals

Description: This course is based on industry-validated skill standards. Topics include operating systems, networking, Windows server administration, and security. English language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Network Administration II

Course Number: BN22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BN20 Network Administration I

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: Microsoft MCTS 70-680 Windows 7 Configuration

Description: This course is based on industry-validated skill standards. Topics of this course include networking security, administrator responsibilities, and documentation of work-based experiences. English language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Personal Finance

Course Number: BF05

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA); Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: CFNC.org Certified Financial Basics for High School and Beyond
EverFi
W!SE

Description: This course prepares students to understand economic activities and challenges of individuals and families, the role of lifestyle goals in education and career choices, procedures in a successful job search, financial forms used in independent living, and shopping options and practices for meeting consumer needs. The course also prepares students to understand consumer rights, responsibilities, and information, protect personal and family resources, and apply procedures for managing personal finances. English language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Principles of Business and Finance

Course Number: BF10

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA)

Aligned Industry Credential: None

Description: This course introduces students to topics related to business, finance, management, and marketing to cover business in the global economy, functions of business organization and management, marketing basics, and significance of business financial and risk management. English language arts, social studies, and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family Career and Community Leaders of America (FCCLA), SkillsUSA, Future Health Professionals (HOSA), and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This course will introduce students to the principles, concepts, and software applications used in the management of projects. Through project-based learning, students will understand how to use the framework of initiating, planning, executing, monitoring and controlling, and closing a project in authentic situations. The core concepts of scope, time, cost, and integration will be examined during this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Project Management II

Course Number: CS12

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: CS11 Project Management I

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family Career and Community Leaders of America (FCCLA), SkillUSA, Future Health Professionals (HOSA), and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This project-based course focuses on the use of information technology to increase the effectiveness and efficiency of project management and integrated enterprise. Students will learn operational strategies for managing advanced technology and innovation as well as how to map the high technology operations environment to business settings. Art, English language arts, and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SAS Programming I

Course Number: BP20

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: One course in another computer programming language

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA)

Aligned Industry Credential: SAS Base Programming for SAS9

Description: This course is the entry point for students to learn SAS programming. Students will learn how to plan and write SAS programs to solve common data analysis problems. Instruction provides practice running and debugging programs. The emphasis is placed on reading input data, creating lists and summary reports, defining new variables, executing code conditionally, reading raw data files and SAS data sets, and writing the results to SAS data sets. Mathematics is reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Informatics Computers, Networks and Databases

Course Number: BR11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA) or SkillsUSA

Aligned Industry Credential: None

Description: This project-based-learning course engages students who are curious about informatics. In this course, students will learn how to use a design process to create systems that acquire, store and communicate data for a variety of career fields. Students will work collaboratively in teams to design systems, solve problems, think critically, be creative and communicate with each other and business partners. Students will participate in real-world experiences such as designing an inventory system for a retail store, comparing stores in a company to project future sales, track customer buying habits and more.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Informatics Design for the Digital World

Course Number: BR12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BR11 SREB AC Informatics Computers, Networks and Databases

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA) or SkillsUSA

Aligned Industry Credential: None

Description: This project-based-learning course engages students who are interested in applying the design process to create systems such as a cloud-based digital storage system for images. Students will design a system to automatically collect and report data on highway usage. They will apply a geospatial system to map a store and develop a database that studies shopping habits. Through these projects, students will learn about data management and logic-based queries by collecting data, using the Global Positioning System (GPS) and analyzing data utilizing a geographic information system (GIS). Th ey will learn how to automate data collection to make processes more effective and efficient. Students will work collaboratively in teams and demonstrate their knowledge and skills by presenting new and innovative ideas, techniques and solutions to business and industry partners.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Informatics Databases in the Cloud

Course Number: BR13

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BR12 SREB AC Informatics Design for the Digital World

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA) or SkillsUSA

Aligned Industry Credential: None

Description: This project-based-learning course is for students who successfully completed SREB AC Informatics Design for the Digital World and who want to tackle the more complex challenges that business and industry face. Students at this level will learn about Web technologies, cloud storage, information security, data, animation, introductory computer programming and database applications. Students will take more responsibility for their own learning, problem solving and thinking outside of the box. Real-world challenges will require higher levels of research, building, testing, analyzing and improving systems. Students will develop solutions for real-world problems by designing a database for ticket sales; designing security for a database; creating a game with animation; reporting information based on population data in a community; and designing, building and testing an application for a database.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Informatics Developing a Cloud Presence

Course Number: BR14

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: BR13 SREB AC Informatics Databases in the Cloud

Aligned Career Technical Student Organization: Future Business Leaders of America (FBLA) or SkillsUSA

Aligned Industry Credential: None

Description: Students in this capstone course will focus on the ethics of privacy, social networking, designing for clients and artificial intelligence through six authentic projects. Students will select a business partner and design, build and test a Web presence for a company that will apply the concepts from the three prior courses. Student teams will work collaboratively with a business partner to develop a proposal for the project with evaluation criteria. Once the business partner accepts the proposal, the student team will implement it by designing, planning, building the system, and testing and revising the system to meet the needs of the business.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Profesionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

CAREER DEVELOPMENT EDUCATION

PROGRAM DESCRIPTION

The Career Development Process involves students, parents, school counselors, teachers, and the community. It helps students understand the lifelong, sequential process of determining self and career identity. Career Development includes delivery of curriculum and career development services that are focused on completing self-assessments, matching interests to career choices, exploring the world-of-work, conducting career research and education, and college and career planning to middle and high school students. Development and implementation of a career development plan is an essential part of the process. This prepares students for success in 21st century careers and education.

Career Development curriculum is designed to expose students to the process of career awareness, exploration, and planning. The middle grades curriculum provides exploratory experiences in understanding self and the relationship to the world-of-work. The high school curriculum provides a more focused exploration of self, careers, and career planning.

Career Development services, coordinated by Career Development Coordinators, support Career and Technical Education. These services provide exposure to, and exploration of, careers within the Career Clusters™ and experiences that assist student transition to careers and college.

NATIONAL STANDARDS

The Career Development program area is aligned to National Career Development Guidelines and the National Standards for School Counseling Programs.

- National Career Development Association
  www.ncda.org
- The American School Counselor Association (ASCA)
  http://www.schoolcounselor.org/

CAREER CLUSTER ALIGNMENT

Career Development courses align to, and are included in, all 16 Career Clusters™.

- North Carolina Career Clusters™ documents http://www.ncpublicschools.org/cte/curriculum/
- Advance CTE States' Career Clusters™ https://careertech.org/
  www.careerclusters.org

CAREER AND TECHNICAL STUDENT ORGANIZATION

Opportunities for leadership development and further exploration of careers are provided through participation in Career and Technical Student Organizations. http://www.dpi.state.nc.us/cte/student/

Career Management

Course Number: CC45

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Student participation in Career and Technical Student Organizations (CTSOs) competitive events, community service and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

Aligned Industry Credential: Conover Credential Workplace Readiness
Express Employment Professionals Career Preparedness Certification
Microburst Learning Employers' Choice Certificate

Description: This course prepares students to locate, secure, keep, and change careers. Emphasis is placed on self assessment of characteristics, interests, and values; education and career exploration; evaluation of career information and creation of a career plan. Based on the National Career Development Guidelines, skills learned in this course include, but are not limited to communications, interpersonal skills, problem solving, personal management and teamwork. English language arts is reinforced. Student participation in Career and Technical Student Organization (CTSO) competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Exploring Career Decisions

Course Number: CC58

Recommended Maximum Enrollment: 30

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: None

Aligned Industry Credential: None

Description: These middle school courselets provide an orientation to the world-of-work. Emphasis is placed on self-awareness, understanding the world-of-work, and the career planning process. Based on the National Career Development Guidelines, skills learned in these courselets include, but are not limited to communications, personal management, and teamwork. English language arts is reinforced. Student participation in Career and Technical Student Organization (CTSO) competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences. Courselets include:

CC582YA Exploring Personal Characteristics and Careers
CC582YB Exploring Careers and Employment

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

FAMILY AND CONSUMER SCIENCES EDUCATION

PROGRAM DESCRIPTION

Family and Consumer Sciences Education empowers individuals to manage the challenges of living and working in a diverse global society by learning real world knowledge and skills. Students develop a complex set of essential skills and knowledge needed to achieve quality of life. They become career-focused as they acquire leadership and confidence to participate in a rapidly changing workforce and global economy.

Family and Consumer Sciences students prepare for family life, work life, and fulfilling, rewarding careers in eight core areas:

- Consumer Education and Resource Management
- Early Childhood Education and Services
- Family and Interpersonal Relationships
- Food Production and Services
- Foods, Nutrition and Wellness
- Housing, Interiors, and Design
- Parenting, Education, and Human Development
- Textiles, Apparel, and Fashion

Family and Consumer Sciences Education offers middle school and high school students hands-on experiences and the opportunity to explore career options in multiple career pathways.

NATIONAL STANDARDS

The *Family and Consumer Sciences National Standards 3.0* are published by the National Association of State Administrators of Family and Consumer Sciences (NASAFACS) to promote the study of Family and Consumer Sciences and provide students an enhanced school experience. Content is designed to promote human literacy by empowering individuals and fostering life span development and career preparedness.

The *Family and Consumer Sciences National Standards 3.0* involved well over 2,000 stakeholders providing recommendations, including business and industry, post-secondary educators, and secondary teachers. The standards are a means of encouraging and evaluating student achievement. They provide skill standards related to Career Clusters (e.g. Human Services, Education and Training, Hospitality and Tourism, Visual Arts and Design) to encourage youth and adults to be better prepared to meet workforce demands. The standards provide a structure for identifying program outcomes; that is, what learners should know and be able to do at the end of a program of study or sequence of courses. Components of the *Family and Consumer Sciences National Standards 3.0* include Areas of Study, Comprehensive Standards, Content Standards, Competencies, and Process Questions.

For additional information go to:
http://www.nasafacs.org/national-standards-and-competencies.html

CAREER CLUSTER ALIGNMENT

Family and Consumer Sciences Education provides students with knowledge and skills needed to realize human potential and prepare for career success. Family and Consumer Sciences content is a complex set of knowledge and skills that builds human literacy and leads to quality of life for individuals and families. Human literacy is achieved in three ways:

(1) Individual empowerment – making informed decisions – e.g., evaluating reliability of information, analyzing pros/cons of choices, and applying information to novel situations.
(2) Life span development – focusing on skills and strategies for meeting human needs from such basic needs as food, apparel, housing, and safety to parenting, early childhood education, food technology and enterprise, personal finance, and resource management.

(3) Career preparedness – learning to access professional opportunities through employability skills, technical expertise, development of work ethic, lifelong learning, and skills for work-life issues.

Family and Consumer Sciences courses provide a context within which reading, math, science, and social studies concepts are applied in real world scenarios. Many Family and Consumer Sciences courses are project-based, providing students hands-on experiences to explore career options and discover what they are passionate about. Students apply content from core subjects to solve problems, apply strategies, and design systems related to foods, apparel, housing, child development, and personal finance concepts.

NC Family and Consumer Sciences courses fall into six Career Clusters™. They are Agriculture, Food and Natural Resources; Architecture and Construction; Arts, AV Technology and Communications; Hospitality and Tourism; Human Services; and Manufacturing.

Use links for more details

http://www.dpi.state.nc.us/cte/program-areas/family/
https://careertech.org/career-clusters

CERTIFICATIONS AND CREDENTIALING

Family and Consumer Sciences Education provides credentialing opportunities for students to demonstrate to employers, post-secondary institutions, and administrators the knowledge and skills they have gained in their Family and Consumer Sciences programs. Earning industry-recognized certifications, validates a students' skill set giving them an extra advantage for both college and careers. Examples of industry-recognized credentials earned in Family and Consumer Sciences programs include:

- North Carolina Early Childhood Credential Equivalency (Lead Teacher)
- ProStart National Certificate of Achievement
- ServSafe Food Protection Manager Certification
- Pre-Professional Assessments and Certifications (Pre-PAC)
    - Fashion, Textiles, and Apparel
    - Food Science Fundamentals

FAMILY, CAREER & COMMUNITY LEADERS OF AMERICA (FCCLA)

Family, Career and Community Leaders of America (FCCLA) is a national Career and Technical Student Organization that provides personal growth, leadership development, and career preparation opportunities for students in Family and Consumer Sciences education.

Members develop leadership and confidence as they address important personal, family, work, and societal issues through projects, national programs, and competitive events. Competitive events such as Culinary Arts, Early Childhood Education, Teach and Train, Fashion Design, Interior Design, Sports Nutrition, and Advocacy allow students to demonstrate skills learned in the Family and Consumer Sciences classroom for potential state and national recognition and scholarships.

North Carolina Family and Consumer Sciences curricula is aligned to the programs and competitive events of state and national FCCLA to encourage the implementation of intracurricular chapters. FCCLA is an integral component of a Family and Consumer Sciences program, helping to graduate students who are career-focused and college-ready.

For more information visit:

National: http://www.fcclainc.org/
State: www.NCFCCLA.org

Apparel and Textile Production I

Course Number: FA31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: In this course students are introduced to the apparel and textile industry in the area of design, textiles and apparel engineering. Emphasis is placed on students applying these design and engineering skills to create and produce apparel products. Art, literacy, mathematics, and science are reinforced.
*For safety reasons, enrollment is not to exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Apparel and Textile Production II

Course Number: FA32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FA31 Apparel and Textile Production I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: Pre-Professional Assessment and Certification in Fashion, Textiles, and Apparel

Description: Students in this course will gain a deeper understanding of design principles, engineering, fabrication and global needs of an ever-changing apparel and textile industry. The course provides a major focus on textile design, textile science, product construction, global manufacturing, and the apparel/textile market while incorporating and scaffolding prerequisite concepts. Emphasis is placed on application of design and engineering skills used to create, produce, and prepare a product for market. Students will also gain the entrepreneurial skills, necessary for successful marketing and distribution of an apparel product. Art, literacy, mathematics, science, and social studies are reinforced throughout.
*For safety reasons, enrollment is not to exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Culinary Arts and Hospitality I

Course Number: FH21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FH20 Introduction to Culinary Arts and Hospitality

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: Certified Restaurant Server
ServSafe® Food Protection Managers Certification

Description: This course focuses on basic skills in cold and hot food production, baking and pastry, and service skills. An in-school foodservice business component allows student to apply knowledge and skills in a commercial setting. Art, English language arts, mathematics, and science are reinforced.
*For safety reasons, enrollment is not to exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Culinary Arts and Hospitality II

Course Number: FH22

Recommended Maximum Enrollment: 20

Hours of Instruction: 270 (block) 300 (regular)

Prerequisite: FH21 Culinary Arts and Hospitality I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: ServSafe® Food Protection Managers Certification

Description: This course provides advanced experiences in cold and hot food production, management (front and back of the house), and service skills. Topics include menu planning, business management, and guest relations. An in-school foodservice business component allows to apply knowledge and skills in a commercial setting. Art, English language arts, mathematics, and science are reinforced.
*For safety reasons, enrollment is not to exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Early Childhood Education I

Course Number: FE11

Recommended Maximum Enrollment: 20

Hours of Instruction: 270 (block) 300 (regular)

Prerequisite: Students must be 16 by October 1. Parenting and Child Development is a recommended prerequisite for this course.

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: CPR, First Aid

Description: This two-credit course prepares students to work with children in early education and child care settings. Areas of study include personal and professional preparation, child development from birth to age 12, techniques and procedures for working with young children, and history, trends and opportunities in this field. An internship makes up 50 percent of instructional time. Due to student participation internships at early childhood centers that meet NC Child Care General Statute 110-91 Section 8, students must be 16 years of age prior to October 1 to enroll in this course. http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_110/GS_110-91.html

*For safety reasons and number of interns placed, enrollment should not exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Early Childhood Education II

Course Number: FE12

Recommended Maximum Enrollment: 20

Hours of Instruction: 270 (block) 300 (regular)

Prerequisite: FE11 Early Childhood Education I and Students must be 16 by October 1

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: CPR, First Aid, NC Early Childhood Credential Equivalency

Description: This two-credit course provides advanced experiences in working with children from infancy to age 12 in early education and child care settings. Areas of study include program planning and management, developmentally appropriate practice, procedures and strategies for working with special groups of children, career development and professionalism. An internship makes up 50 percent of instructional time. Due to student participation internships at early childhood centers that meet NC Child Care General Statute 110-91 Section 8, students must be 16 years of age prior to October 1 to enroll in this course. http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_110/GS_110-91.html

*For safety reasons and number of interns placed, enrollment should not exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Exploring Family and Consumer Sciences

Course Number: FC01

Recommended Maximum Enrollment: 25

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: This middle school course is composed of instructional modules designed to provide instruction on basic Family and Consumer Sciences foundation and skills. The following seven modules are included: interpersonal relationships, personal finance and resource management, nutrition and wellness, food service and hospitality, early care and education, apparel and interior design. Students are eligible to receive EverFi's Vault, NC eFoodhandler and American Red Cross Babysitter certifications. English language arts and mathematics are reinforced. Courselets include:

FC012YA Exploring Interpersonal Relationships and Childcare
FC012YB Exploring Nutrition and Wellness
FC012YC Exploring Apparel and Interior Design
FC012YD Exploring Personal Finance and Hospitality

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Fashion Merchandising

Course Number: MI21

Please refer to the Marketing and Entreprenuership Education program area for the full course description.

Food and Nutrition I

Course Number: FN41

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FC11 Principles of Family and Human Services recommended

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: First Principles Food Handler Certificate

Description: This course examines the nutritional needs of the individual. Emphasis is placed on fundamentals of food production, kitchen and meal management, food groups and their preparation, and time and resource management. English language arts, mathematics, science, and social studies are reinforced. Work-based learning strategies appropriate for this course include service learning and job shadowing. Apprenticeship and cooperative education are not available for this course. Family, Career and Community Leaders of America (FCCLA) competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Food and Nutrition II

Course Number: FN42

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FN41 Foods and Nutrition I OR FH21 Culinary Arts and Hospitality I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: ANSI Approved Certified Food Protection Manager
Pre-Professional Assessment and Certification in Nutrition, Food, and Wellness

Description: In this course, students experience the intersection of nutrition science and food preparation, while building skills for an expanding range of career opportunities. Emphasis is placed on health and social responsibility while improving the way people eat. Students learn how to manage food safety; plan and prepare meals for a variety of consumers and clients; and explore the food system and global cuisines. *For safety and sanitation reasons, enrollment should not exceed 20 in this course. English/language arts, social studies, mathematics, science, technology, interpersonal relationships are reinforced. Work-based learning strategies appropriate for this course include apprenticeship, cooperative education, entrepreneurship, internship, mentorship, school-based enterprise, service learning and job shadowing. Family, Career and Community Leaders of America (FCCLA) competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.
*For safety and sanitation reasons, enrollment should not exceed 20 in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Food Science and Technology

Course Number: FN43

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FN41 Food and Nutrition I or FH21 Culinary Arts and Hospitality I AND Environmental Science or Physical Science or Biology or Chemistry

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: Pre-Professional Assessment and Certification in Food Science Fundamentals

Description: This course explores the food industry from the farm to the table using skills in food science, technology, engineering, and mathematics. Government regulations, emerging trends, biotechnology, and technological career opportunities from scientists to technicians will be presented. The student examines production, processing, preparation, preservation, and packaging principles along the farm to table continuum. The student begins to understand how food technology affects the food that he/she eats. English language arts, science, social studies, and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Interior Design I

Course Number: FI51

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FC11 Principles of Family and Human Services recommended

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: This course engages students in exploring various interior design professions, while building the content knowledge and technical skills necessary to provide a foundational knowledge of the design industry. Emphasis is placed on design thinking and utilization of the interior design process; human, environmental and behavioral factors; color theory, elements and principles of design; hand sketching/digital design techniques, space planning, selection of products and materials for residential interiors; client relationship building and design communication techniques. English/language arts, mathematics, science, art, and technology are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Interior Design II

Course Number: FI52

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FI51 Interior Design I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: This course prepares students for entry-level and technical work opportunities in the residential and non-residential interior design fields. Students deepen their understanding of design fundamentals and theory by designing interior plans to meet living space needs of specific individuals or families. Topics include application of design theory to interior plans and production, selection of materials, and examination of business procedures. Art and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Interior Digital Applications

Course Number: FI53

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FI51 Interior Design I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: Autodesk Certified User Revit

Description: This course prepares students for entry-level and technical work opportunities in interior design. Students apply design skills through Autodesk Revit software to meet clients' needs using components found in residential and commercial spaces. Art and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Introduction to Culinary Arts and Hospitality

Course Number: FH20

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: ServSafe® Food Protection Managers Certification

Description: In this course, basic safety and sanitation practices leading to a national industry-recognized food safety credential are introduced. Commercial equipment, small wares, culinary math, and basic knife skills, and cold food production in a commercial foodservice facility are taught. An in-school foodservice business component allows students to apply knowledge and skills in a commercial setting. Art, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Parenting and Child Development

Course Number: FE60

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: This course introduces students to responsible nurturing and basic applications of child development theory with children from infancy through age six. Areas of study include parenthood decisions, child care issues, prenatal development and care, and development and care of infants, toddlers, and children three through six. Emphasis is on responsibilities of parents, readiness for parenting, and the influence parents have on children while providing care and guidance. Art, English language arts, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Personal Finance

Course Number: BF05

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Principles of Family and Human Services

Course Number: FC11

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: Students learn life literacy skills and individual, family, and community systems in the context of the human services field. Emphasis is placed on human development, professional skills, diversity, analyzing community issues, and life management. Activities engage students in exploring various helping professions, while building essential life skills they can apply in their own lives to achieve optimal wellbeing. English/language arts, social studies, mathematics, science, technology, and interpersonal relationships are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

ProStart I

Course Number: FH71

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FN41 Food and Nutrition I recommended

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: ProStart Certificate of Recognition Level One

Description: This course allows students to survey culinary techniques and restaurant management skills. Students learn about the industry, food and kitchen safety, kitchen and management foundations, front-of-house operations, and basic food preparation including salads, sandwiches, baked goods, and stocks, sauces, and soups. Students also learn communication skills, professional expectations, and how to build a food service career. Students should complete 200 hours of the required 400-hour, one-credit internship, which will lead to the National ProStart Certificate of Achievement. English, language arts, and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

ProStart II

Course Number: FH72

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: FH71 ProStart I

Aligned Career Technical Student Organization: Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: ProStart National Certificate of Achievement
ProStart Certificate of Recognition Level II

Description: This course allows students to survey culinary techniques and restaurant management skills. Students learn restaurant marketing, menu management, controlling foodservice costs, human resources, and food products and preparation, including breakfast foods; fruits, vegetables, and starches; meat, poultry, and seafood; and baked goods and desserts. Students also learn about sustainability, nutrition, and the role of foodservice operations in these initiatives. Students should complete 200 hours of the required 400-hour, one-credit internship, which will lead to the National ProStart Certificate of Achievement. Apprenticeship is available for this course. English, language arts, and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

HEALTH SCIENCE EDUCATION

PROGRAM DESCRIPTION

Health Science Education is a broad curriculum at the middle and high school levels that provides students with meaningful instruction for and about healthcare careers. Health Science Education plays a major role in meeting present and predicted needs for health care professionals within a health care delivery system characterized by diversity and changing technologies.

Health Science Education is designed to prepare graduates as viable competitors in the healthcare industry and for advanced educational opportunities.

Literacy and numeric skills are an integral part of the health science program. Development of 21st century skills including collaboration, critical thinking, economic literacy, entrepreneurial skills, and problem-solving is a part of each of the career pathways. Opportunities to develop and apply leadership, social, civic, and healthcare skills are provided through HOSA future health professionals, the Career and Technical Student Organization for health science education. Integration of the health science program with appropriate academic concepts/courses is strongly encouraged.

NATIONAL STANDARDS

Health Science Education curriculum is designed to reflect national standards in Health Science.

- National Consortium for Health Science Education www.healthscienceconsortium.org
- National Healthcare Foundation Standards and Accountability Criteria http://www.healthscienceconsortium.org/docs/foundation-standards-ac-may-09.pdf
- Career Clusters™ http://www.careerclusters.org/

CAREER CLUSTER ALIGNMENT

The Health Science Education program is designed to provide students with appropriate, comprehensive preparation for careers and postsecondary education in the Health Science Career Cluster.

CERTIFICATIONS AND CREDENTIALING

Health Science Education courses provide students opportunities to obtain industry certifications. Students may prepare to earn certifications in Nurse Aide I and Pharmacy Technician.

CAREER AND TECHNICAL STUDENT ORGANIZATION- HOSA: Future Health Professionals

HOSA's twofold mission is to promote career opportunities in the healthcare industry and to enhance the delivery of quality health care to all people. HOSA's mission is especially critical when considering the acute shortage of qualified workers for the health care industry.

HOSA is organized on local, state, and national levels. Health Science teachers, advisors, and advisory councils guide local chapters. State advisors and committee members coordinate chapter activities for the national organization. HOSA provides a unique program of leadership development, motivation, and recognition.

HOSA works best when it is integrated into the Health Science Education curriculum and classroom. Participation in HOSA Future Health Professionals provides students with the critical soft-skill development that is essential in the 21st century employee.

State HOSA website www.nchosa.org
National HOSA website www.hosa.org

Biomedical Technology I

Course Number: HB11

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course challenges students to investigate current trends in health care . Topics include ethics, forensic medicine, infectious diseases, organ transplants, cell biology and cancer, and biomedical research. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Biomedical Technology II

Course Number: HB12

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HB11 Biomedical Technology I

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: OSHA 10-Hour General Industry (Healthcare) Certification

Description: This course focuses on genetics, neurobiology, sleep disorder and biological rhythms, bioethics, the evolution of medicine, and use of technology to study cellular and molecular biology. The curriculum was developed by the National Institutes of Health (NIH). Students will learn about careers in biotechnology within the context of the course content. Projects, teamwork, and demonstrations serve as instructional strategies that reinforce the curriculum content. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Exploring Biotechnology in Health Science

Course Number: HB05

Recommended Maximum Enrollment: 30

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course introduces students to biotechnology. Topics include medical math, safety issues, cellular design, biomedical research, bioethics, and careers in biotechnology. English language arts and science are reinforced in this course. Courselets include:

HB052YA Fundamentals of Biotechnology
HB052YB Introduction to Biotechnology
HB052YC Biotechnology and Healthcare

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Fundamentals of Gerontology

Course Number: HN44

Recommended Maximum Enrollment: 20*

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HU42 Health Science II

Aligned Career Technical Student Organization: HOSA

Aligned Industry Credential: Students who are listed on the North Carolina Nurse Aide Registry and successfully complete Fundamentals of Gerontology will receive an endorsement on the Nurse Aide 1 listing. Students who take Fundamentals of Gerontology and later (within two years) become listed on the NC Nurse Aide 1 Registry as a Nurse Aide 1, may receive the NA1 geriatric endorsement from the North Carolina Division of Health Services Regulation (DHSR).

Description: This course is designed to assist future healthcare professionals to understand the unique physical and psychological changes related to aging. Healthcare strategies to meet the needs of the aging population will be addressed. Healthcare agencies may require testing for tuberculosis and/or other diseases and a criminal record check for felonies related to drugs.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Health Science I

Course Number: HU40

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course focuses on human anatomy, physiology, human body diseases and disorders, and biomedical therapies. Students will learn about healthcare careers within the context of human body systems. Projects, teamwork, and demonstrations serve as instructional strategies that reinforce the curriculum content. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Health Science II

Course Number: HU42

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HU40 Health Science I OR HP71 PLTW Human Body Systems

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: CPR/AED
OSHA 10-Hour General Industry (Healthcare) Certification

Description: This course is designed to help students expand their understanding of financing and trends of healthcare agencies, fundamentals of wellness, legal and ethical issues, concepts of teamwork, and effective communication. Students will learn health care skills, including current CPR and first aid training for healthcare professionals. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Health Team Relations

Course Number: HU10

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course is designed to assist potential health care workers in their role and function as health team members. Topics include medical terminology, the history of health care, healthcare agencies, ethics, legal responsibilities, health careers, holistic health, health care trends, cultural awareness, communication, medical math, leadership, and career decision making. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Nursing Fundamentals

Course Number: HN43

Recommended Maximum Enrollment: 10

Hours of Instruction: 270 (block) 300 (regular)

Prerequisite: HU42 Health Science II

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: North Carolina Nurse Aide I

Description: This course is designed for students interested in medical careers where personal care and basic nursing skills are used. This course is an enhanced adaptation of the North Carolina Division of Health Service Regulation (DHSR) Nurse Aide I (NAI) curriculum and helps prepare students for the National Nurse Aide Assessment (NNAAP). Students who pass the NNAAP become listed on the NC NAI Registry. English language arts mathematics, and science are reinforced.

*Enrollment is limited per North Carolina Board of Nursing (BON) Administrative Rule 21 NCAC 36.0318(i), which requires the ratio of teacher to nurse aide students be 1:10 or less during lab instruction, demonstration, skills practice, and while in the clinical area.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Pharmacy Technician

Course Number: HH32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HU32 Health Science II, or HB12 Biomedical Technology II

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: Cpht Certified Pharmacy Technician

Description: This course has self-paced, on-line instruction designed to prepare high school seniors for a pharmacy technician career. Topics included in this course are federal law, medication used in major body systems, calculations, and pharmacy operations. Mathematics is reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Biomedical Innovations

Course Number: HP73

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HP72 PLTW Medical Interventions

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course allows students to apply their knowledge and skills to answer questions or solve problems related to biomedical sciences. Students design innovative solutions to the health care challenges of the 21st century. Students work on independent projects and may work with a mentor in the healthcare industry. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Human Body Systems

Course Number: HP71

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HP70 PLTW Principles of Biomedical Sciences

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: CPR/AED
First Aid

Description: In this course students examine the human body systems, design experiments and use data acquisition software to monitor body functions and often play the role of the biomedical professional. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Medical Interventions

Course Number: HP72

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HP71 PLTW Human Body Systems

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course allows students to investigate the interventions involved in the prevention, diagnosis and treatment of disease. It is a "How-To" manual for maintaining overall health. English language arts and science are reinforced in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Principles of Biomedical Sciences

Course Number: HP70

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Future Health Professionals (HOSA)

Aligned Industry Credential: None

Description: This course is designed for students to investigate the human body systems and various health conditions. They determine factors that lead to the death of a fictional person and investigate lifestyle choices.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Technology Education program area for the full course description.

Public Health Fundamentals

Course Number: HN45

Recommended Maximum Enrollment: 20*

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HN42 Health Science II

Aligned Career Technical Student Organization: HOSA

Aligned Industry Credential: Students who are listed on the NC Nurse Aide I Registry and successfully complete Public Health Fundamentals will receive a Home Care Aide endorsement on the Nurse Aide I listing. Students, who successfully complete Public Health Fundamentals and later (within two years) become listed on the NC Nurse Aide I Registry as a Nurse Aide I, may receive the NAI Home Care Aide endorsement.

Description: Adapted from the NC Division of Health Services Regulation, this course is designed to assist future healthcare professionals understand the unique challenges and strategies involved in the delivery of healthcare outside traditional facilities and without traditional supervision structure, and is responsive to overwhelming need for community based healthcare. HN43 Nursing Fundamentals is recommended as good preparation for this course. However, students may take HN45 Public Health Fundamentals before or after 7243 Nursing Fundamentals. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Health Informatics Data and Use

Course Number: HV11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: HOSA or SkillsUSA

Aligned Industry Credential: None

Description: This foundational course focuses on the use of data and databases within the health field. Students explore the following questions using project-based and problembased scenarios. What are data? What are the sources of data in the medical and health informatics fields? How can we use data? How do we make sense of data? How may we apply data to our own lives? Students interact with professionals in the health informatics field through interviews or on-site and/or virtual field trips.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Health Informatics Transforming Data into Information

Course Number: HV12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HV11 SREB AC Health Informatics Data and Use

Aligned Career Technical Student Organization: HOSA or SkillsUSA

Aligned Industry Credential: None

Description: In this course, students study ways to use data to address both patient and industry needs in the health-care field. Students use software such as Microsoft Access, Excel and Balsamiq to collect and analyze data, develop a health-care registry, create a mobile app mockup and develop forms and systems to solve health-care problems. Th e following questions are addressed through project or problem-based scenarios: How can technology and analysis create better information to inform better decisions? How can we use technology tools to create information from data? How can we use technology to improve public and individual health? How can we use technology to protect patient privacy?
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Health Informatics Transforming Information into Knowledge

Course Number: HV13

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HV12 SREB AC Health Informatics Transforming Data into Information

Aligned Career Technical Student Organization: HOSA or SkillsUSA

Aligned Industry Credential: None

Description: This advanced course allows students to make improvements in the health-care field by designing solutions using the information, knowledge and technology tools available to health informatics professionals. Students are engaged in the following activities: building a system of sharing information among health-care facilities; using social media tools to reduce diseases in foreign countries; exploring voice recognition software; using a motion-based video gaming console for rehabilitation; and exploring clinical decision rules for improving patient care. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Health Informatics Problems and Solutions

Course Number: HV14

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: HV13 SREB AC Health Informatics Transforming Information into Knowledge

Aligned Career Technical Student Organization: HOSA or SkillsUSA

Aligned Industry Credential: None

Description: In this advanced course, students study and design solutions to problems facing health-care systems. Students explore the following questions through project or problem-based scenarios: How can the health-care system work more efficiently and economically? How do we address health-care issues in rural locations? How can various community organizations work together to improve the health of the community? Students interact with professionals in the health informatics field through interviews or on-site and/or virtual field trips. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

MARKETING AND ENTREPRENEURSHIP EDUCATION

PROGRAM DESCRIPTION

Marketing and Entrepreneurship Education provides opportunities for students to apply problem solving and analytical skills. Students are prepared for advancement in marketing, management, and entrepreneurship careers.

Marketing, management, and entrepreneurship are vast and diverse disciplines. Their functions exist in all industries. These disciplines encompass activities of ideation of products and services, better use of resources, and the aspects of consumption of products and services. These activities prepare students with the knowledge and skills as specific as procedures for research and, at the same time, as general as the creativity needed in promotion.

Based upon the National Marketing Education Standards and the National Curriculum Framework, courses in Marketing and Entrepreneurship Education program provide students with essential skills necessary to be college and career ready in a global economy. The program includes courses for students in grades 9-12. Students may develop knowledge and skills in career pathways available through four Career Clusters™:

- Arts, A/V Technology & Communication
- Hospitality & Tourism
- Marketing
- Transportation, Distribution & Logistics

NATIONAL STANDARDS

Marketing and Entrepreneurship Education curriculum is designed to reflect national standards in:

- Career Clusters™ https://www.careertech.org
- Consortium for Entrepreneurship Education http://www.entre-ed.org/_teach/activits.htm
- MBA Research http://www.mbaresearch.org
- National Retail Federation www.nrf.com

CAREER CLUSTER ALIGNMENT

The Marketing and Entrepreneurship Education program is designed to provide students with appropriate, comprehensive preparation to be college and career ready in the following Career Clusters™:

- Arts, A/V Technology & Communication
- Hospitality & Tourism
- Marketing
- Transportation, Distribution & Logistics

The program of studies is designed to provide maximum career opportunities to students in those Career Clusters™. The program also provides students core instruction in the other Career Clusters™.

CERTIFICATIONS AND CREDENTIALING

Marketing and Entrepreneurship Education courses provide students multiple opportunities to obtain industry certifications. Several opportunities include:

- Assessment of Skills and Knowledge (A*S*K) Concepts of Entrepreneurship Management or Fundamental Marketing Concepts, http://www.askinstitute.org/
- Advanced Customer Service or Sales Certification, www.nrf.com

CAREER AND TECHNICAL EDUCATION STUDENT ORGANIZATION

DECA (an association for Marketing Education students)

- DECA for high school students
- DECA for college students
- Professional Division for business people, DECA alumni, educators, and parents who all support the goals of the association

DECA prepares emerging leaders and entrepreneurs for careers in marketing, finance, hospitality, and management. It provides students with leadership opportunities at the local, state, and national levels. Members may seek elected office or serve in positions of committee leadership. Students gain valuable hands-on, authentic leadership skills by being active in the student-led student organization.

DECA enhances the preparation for college and careers by providing co-curricular programs that integrate into classroom instruction, applying learning in the context of business, connecting to business and the community, and providing unique opportunities to extend classroom learning through competitive events. Members leverage their DECA experience to become academically prepared, community oriented, professionally responsible, and experienced leaders.

State DECA website www.ncdeca.org
National DECA website www.deca.org

Entrepreneurship I

Course Number: ME11

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: MM51 Marketing or BF05 Personal Finance OR BF10 Principles of Business and Finance

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA)

Aligned Industry Credential: Venture Entrepreneurial Expedition

Description: In this course, students evaluate the concepts of going into business for themselves and working for or operating a small business. Emphasis is on the exploration of feasible ideas of products/services, research procedures, business financing, marketing strategies, and access to resources for starting a small business. Students develop components of a business plan and evaluate startup requirements. English language arts and social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Entrepreneurship II

Course Number: ME12

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: ME11 Entrepreneurship I

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Future Business Leaders of America (FBLA)

Aligned Industry Credential: Concepts of Entrepreneurship & Management,
Venture Entrepreneurial Expedition
Entrepreneurship and Small Business

Description: In this course, students develop an understanding of pertinent decisions to be made after obtaining financing to open a small business. Students acquire in-depth understanding of business regulations, risks, management, and marketing. Students develop a small-business management handbook. English language arts and social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Fashion Merchandising

Course Number: MI21

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA); Family, Career and Community Leaders of America (FCCLA)

Aligned Industry Credential: None

Description: This course is designed to simulate a comprehensive experience of the business of fashion. The experience should bring alive the economics, distribution, promotion, and retail of fashion, and essential strategies of promoting and selling fashion. Upon completion of the course, students should be ready for entry-level fashion retail work or post secondary education. English, mathematics, social studies, and technology are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Hospitality and Tourism

Course Number: MH42

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: MM51 Marketing or BF10 Principles of Business and Finance or MH31 Sports and Entertainment Marketing I

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: Certified Guest Service Professionals (CGSP)
Advanced Customer Service and Sales Certification
Fundamental Marketing Concepts

Description: In this course, students acquire understanding of the economic impact and marketing strategies for hospitality and tourism destinations. Emphasis is on destination complexity, customer relations, economics, legal and ethical responsibilities, safety and security, and tourism promotion. English, language arts, mathematics, social studies and technology are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Marketing

Course Number: MM51

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: None

Description: In this course, students develop an understanding of the processes involved from the creation to the consumption of products/services. Students develop an understanding and skills in the areas of distribution, marketing-information management, market planning, pricing, product/service management, promotion, and selling. Students develop an understanding of marketing functions applications and impact on business operations. Mathematics and social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Marketing Applications

Course Number: MA52

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: MM51 Marketing or MI21 Fashion Merchandising

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: Customer Service and Sales Certification
Advanced Customer Service and Sales Certification
Fundamental Marketing Concepts

Description: In this course, students will apply an understanding of marketing functions and impact of the functions on business decisions. Through problem solving and critical thinking, students will apply knowledge and skills in the areas of customer relations, economics, financial analysis, channel management, marketing-information management, marketing planning, products and services management, and selling. Relative opportunities are available for students to use technology to acquire and use marketing information. English, language arts, and social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Multichannel Merchandising

Course Number: MI42

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: MI21 Fashion Merchandising OR MM51 Marketing

Aligned Career Technical Student Organization: DECA

Aligned Industry Credential: None

Description: This course integrates the application of technical, management, and entrepreneurial skills pertinent for the merchandising industry. The merchandising industry topics of study include operation and management techniques, mathematics, market buying and allocation, entrepreneurship, ethics, forecasting, mobile consumer, and selling. Upon completion of the course, students should be ready for the merchandising industry at the entry level of work or post-secondary education. English, mathematics, social studies, and technology are reinforced. DECA (an association for Marketing Education students) competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Personal Finance

Course Number: BF05

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Principles of Business and Finance

Course Number: BF10

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Sports and Entertainment Marketing I

Course Number: MH31

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: None

Description: In this course, students are introduced to the industry of sports, entertainment, and event marketing. Students acquire transferable knowledge and skills among related industries for planning sports, entertainment, and event marketing. Topics included are branding, licensing, and naming rights, business foundations, concessions and on-site merchandising, economic foundations, human relations, and safety and security. Mathematics and social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Sports and Entertainment Marketing II

Course Number: MH32

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: MH31 Sports and Entertainment Marketing I

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: Customer Service and Sales Certification
Advanced Customer Service and Sales Certification
Fundamental Marketing Concepts

Description: In this course, students acquire an understanding of selling, promotion, and market planning of sports, entertainment, and event marketing. Emphasis is on business management, career development, client relations, contracts, ethics, event management, facilities management, legal issues, and sponsorships. English/language arts, mathematics and Social studies are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Strategic Marketing

Course Number: MU92

Recommended Maximum Enrollment: 30

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA)

Aligned Industry Credential: Customer Service and Sales Certification
Advanced Customer Service and Sales Certification
Fundamentals Marketing Concepts

Description: This fast-paced course challenges students by combining into one course the concepts taught in the Marketing and Marketing Application courses. The curriculum, activities, and resources utilized in this course are written at the freshman college level. The Strategic Marketing course focuses on the impact of marketing on society, procedures used in buying behavior, procedures to manage marketing information, procedures to develop and manage products, pricing procedures, promotion, marketing channels, supply chain management, retail operations, and global marketing. English/language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

TECHNOLOGY ENGINEERING AND DESIGN

PROGRAM DESCRIPTION

The Technology Engineering and Design program is designed to provide middle and high school students essential and enduring 21st century skills. Technology Engineering and Design is a STEM (Science, Technology, Engineering, and Math) program that uses the arts, engineering, languages, technologies, AND sciences to understand, communicate, and design.

NATIONAL STANDARDS

The Standards for Technological Literacy were initiated by the International Technology Engineering Education Association (ITEEA) and funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). The project, Technology for All Americans, has created a rationale, structure, and framework for Technology Education K-12. These standards identify what all students should know and can do with respect to understanding technology. The North Carolina Technology Engineering and Design Core and Visualization strands have been designed by the (ITEEA) STEM Center for Teaching and Learning, to reflect the Standards for Technological Literacy standards and benchmarks.

The International Technology and Engineering Educators Association's STEM Center for Teaching and Learning has developed the only standards-based national model for Grades K-12 that delivers technological literacy. The model, Engineering by Design™ is built on Standards for Technological Literacy (ITEEA); Principles and Standards for School Mathematics (NCTM); and Project 2061, Benchmarks for Science Literacy (AAAS).

CAREER CLUSTER ALIGNMENT

The Technology Engineering and Design program is designed to provide students with appropriate, comprehensive preparation for careers and postsecondary education in the Science, Technology, Engineering, and Mathematics (STEM) and Arts, A/V Technology & Communications Career Clusters™. The Program of Studies is constructed to provide maximum career opportunities to students in those Career Clusters™. Technology Engineering and Design courses also provide students core instruction in other Career Clusters™.

CAREER AND TECHNICAL EDUCATION STUDENT ORGANIZATION- TECHNOLOGY STUDENT ASSOCIATION (TSA)

North Carolina Technology Student Association (NC TSA) is an essential element of the state's Technology Education Program. This student organization provides the opportunity for students to engage in activities directly reflecting the curriculum. Along with learning collaboration and leadership skills, students can engage in student-centered, complex tasks that are authentic and developed over an extended period. Beyond the powerful influence of the activities, participation in the NC-TSA helps transform one's program by affording both the teacher and his or her students the opportunity to learn from others by attending regional, state, and national conferences.

North Carolina TSA Site: http://www.nctsa.org
National TSA Site http://www.tsaweb.org/

Advanced Game Art and Design

Course Number: TS32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TS31 Game Art and Design

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course is a continuation in the study of game design and interactivity. Emphasis is placed on visual design, evaluating, scripting and network protocols, and legal issues as well as 3D visual theory. Students compile a game portfolio. Advanced topics include the use of audio and visual effects, rendering, modeling, and animation techniques. Students work in collaborative teams to develop a final 3 D game project. Art, English language arts, mathematics and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Digital Design and Animation I

Course Number: TS24

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: Digital Design and Animation I is an introductory level course focusing on the concepts and tools used by digital artists in a wide variety of creative careers including graphic design, film, and game design. Students work with professional-grade creative software packages to develop 2D and 3D digital graphics and audio/video media. Students use Adobe CC Suite, and digital 3D modeling with 3DS Max to build needed skills for subsequent courses.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Digital Design and Animation II

Course Number: TS25

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TS24 Digital Design and Animation I

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: 3ds Max Certified Associate

Description: Digital Design and Animation II emphasizes the use of industry-standard digital technology and media to help students develop the artistic and technical skills necessary to plan, analyze, and create visual solutions to 21st Century communications problems. Students engage in digital art activities using professional-grade creative software packages to develop complex 2D and 3D digital graphics and audio/video media. Students apply Adobe CC Suite and 3DS Max skills to industry-related activities and projects, mirroring workplace scenarios.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Engineering Design

Course Number: TE13

Recommended Maximum Enrollment: 20*

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TE11 Technology Engineering and Design

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course continues to apply the skills, concepts, and principles of engineering. Students explore various technological systems and engineering processes in related career fields. Topics include investigating technological system, design optimization, and problem solving. Students utilize CAD and physical and virtual modeling concepts to construct, test, collect, and report data. Art, English language arts, mathematics and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Game Art and Design

Course Number: TS31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TS21 Scientific and Technical Visualization I

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course introduces students to techniques used in the electronic game industry. Students will focus on the principles used in game design including mathematical and virtual modeling. Emphasis is placed on areas related to art, history, ethics, plot development, storyboarding, programming, 2D Visual theory, and interactive play technologies. Students develop physical and virtual games using hands-on experience and a variety of software. Art, English language, arts, mathematics and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Aerospace Engineering

Course Number: TP25

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Pathway to Engineering (PTE) Foundation

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this specialization Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students design problems related to aerospace information systems, astronautics, rocketry, propulsion, the physics of space science, space life sciences, the biology of space science, principles of aeronautics, structures and materials, and systems engineering. Using 3-D design software, students work in teams utilizing hands-on activities, projects, and problems and are exposed to various situations encountered by aerospace engineers. Art, English, language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Civil Engineering and Architecture

Course Number: TP23

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Pathway to Engineering (PTE) Foundation

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this specialization Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students learn important aspects of buildingand site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3-D architectural design software. Art and English language arts are also reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Computer Integrated Manufacturing

Course Number: TP22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Pathway to Engineering (PTE) Foundation

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this specialization Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students discover and explore manufacturing processes, product design, robotics, and automation, and then they apply what they have learned to design solutions for real-world manufacturing problems. Art, English language arts, mathematics and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Digital Electronics

Course Number: TP21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this foundation Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students explore the foundations of computing by engaging in circuit design processes to create combinational logic and sequential logic (memory) as electrical engineers do in industry. Art, English language arts, mathematics and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Engineering Design and Development

Course Number: TP31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Pathway to Engineering (PTE) Foundation

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this capstone Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students identify a real-world challenge and then research, design, and test a solution, ultimately presenting their unique solutions to a panel of engineers.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Environmental Sustainability

Course Number: TP27

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Pathway to Engineering (PTE) Foundation

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this specialization Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students investigate and design solutions in response to real-world challenges related to clean and abundant drinking water, food supply, and renewable energy. Art, English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Gateway to Technology

Course Number: TP01

Recommended Maximum Enrollment: 20

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: Project Lead the Way (PLTW) Gateway to Technology (GTT) engages students in activities that not only build knowledge and skills in areas including computer science, engineering, and biomedical science, but also empower students to develop essential skills such as problem solving, critical and creative thinking, communication, collaboration, and perseverance. Course code TP01 is used for all Project lead the Way middle school units. PLTW Gateway's 10 units empower students to lead their own discovery. The hands-on program boosts classroom engagement and excitement, drives collaboration, and inspires "aha! moments" and deep comprehension. And as students engage in PLTW's activities in computer science, engineering, and biomedical science, they see range of paths and possibilities they can look forward to in high school and beyond.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Introduction to Engineering Design

Course Number: TP11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this foundation Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students are exposed to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. Students use 3D solid modeling design software to help them design solutions to solve proposed problems and learn how to document their work and communicate solutions to peer and members of the professional community. Art, English, language arts, mathematics and science are reinforced.

*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

PLTW Principles of Engineering

Course Number: TP12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: OSHA 10-Hour Industry Certification

Description: In this foundation Project Lead the Way (PLTW) Pathway to Engineering (PTE) course, students survey engineering and are exposed to major concepts they will encounter in a postsecondary engineering course of study. Students employ engineering and scientific concepts in the solution of engineering design problems. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, documenting their work and communicating solutions to peers and members of the professional community. Art, English language arts, mathematics and science are reinforced.

*Due to potentially hazardous process and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Scientific and Technical Visualization I

Course Number: TS21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course introduces students to the use of complex graphic tools. Emphasis is placed on the principles, concepts, and use of complex graphic and visualization tools as applied to the study of science and technology. Students use complex 2D graphics, animation, editing, and image analysis tools to better understand, illustrate, explain, and present technical, mathematical, and/or scientific concepts and principles. Emphasis is placed on the use of computer-enhanced images to generate both conceptual and data-driven models, data-driven charts, and animations. Science, math, and visual design concepts are reinforced through the course. Activities are structures to integrate physical and social science, mathematics, English language arts, and art.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Scientific and Technical Visualization II

Course Number: TS22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TS21 Scientific and Technical Visualization I

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course provides students with advanced skills in the use of complex visualization tools for the study of science, technology, or mathematical concepts. Students design and develop increasingly complex data and concept-driven visualization models. Students use complex 2D and 3D graphics, animation, editing, and image analysis tools to better understand, illustrate, and explain concepts. Students present technical, mathematical, and or scientific concepts and principles. Activities are structured to integrate physical and social sciences, mathematics, English language arts, and art.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Advanced Technology for Design and Production

Course Number: TR11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course will engage students in the use of modern technologies in the design and improvement of products. Students will use three-dimensional CAD software in the creation and analysis process. Students will document designs using standards set by industry for design documentation. Students will implement methods of green production and just-in-time component supply which allow for the lowest cost and highest quality products. Students will design and troubleshoot data acquisition, programmable logic control, process monitoring, automation and robotic systems. Students will incorporate sensing and vision systems, utilizing cameras and sensors to control automated systems.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Systems of Advanced Technology

Course Number: TR12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR11 SREB AC Advanced Technology for Design and Production

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: In this course, students will apply the technologies that are found in modern clean, production environments. Students study effective and energy efficient control of pumping, conveyors, piping, pneumatic and hydraulic control systems. Students apply total quality management to production design to assure quality. Students also focus on properties of materials and material testing, creating documentation to support designs, examining properties and justifying material selections based on properties. Students learn that old products become the new raw materials for new products.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Mechatronic Systems for Advanced Production

Course Number: TR13

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR12 SREB AC Systems of Advanced Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: Students will design cost-effective work cells incorporating automation and robotics to improve quality of fi nal products. The advanced production in this course depends on the use and coordination of information, automation, network systems, vision and sensing systems. Students will design and create mechatronic systems and automated tooling to accomplish these advanced tasks. Students produce authentic documentation about their cyber-mechanical systems and the integration with data to control and monitor processes.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Design for the Production of Advanced Products

Course Number: TR14

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR13 SREB AC Mechatronic Systems for Advanced Production

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: NI Certified LabVIEW Associate Developer (CLAD).

Description: Students will create plant designs to process and automatically assemble materials into new products. Students follow the process of developing and producing a new product from prototype to final product. They will accomplish this by creating a production flow plan that allows for the mass production of the product. Students will analyze and evaluate all aspects of the design and production processes with an emphasis on clean, lean and green production. Students will utilize data acquisition, quality control processes and Six Sigma methodology to control production.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Fundamentals of Aerospace Technology

Course Number: TV16

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: Th is project-based learning course engages students who are curious about aviation and aerospace careers. Th is course will introduce students to an engineering design process, tools to collect and analyze data, the science of aviation, materials and structures, and safety. Students will participate in real-world experiences such as designing, building and testing a pilot seat, kite, straw rocket and launcher, motorpowered rocket and a model glider. Students will work collaboratively, manage projects, be creative and innovative, think critically, and solve problems as well as propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to eff ectively solve real-world, challenging problems with business and industry partners. Through project-based learning, students will explore the future of the aerospace industry and learn to apply those habits of behavior and mind unique to the field.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Advanced Aerospace Technology

Course Number: TV17

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV16 SREB AC Fundamentals of Aerospace Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course builds on the foundation of SREB AC Fundamentals of Aerospace Technology and engages students in applying the design process, using tools to collect and analyze data, exploring a deeper level of the science of aviation and discovering how quality control systems work in the aviation field. Students will work collaboratively in teams to design, build and test a wing; plot a course for a plane to take off and land; design, build and test a wing attachment system; test materials under stress; and design, build and test an electric-powered plane. Students will demonstrate their newly acquired knowledge and skills by presenting their innovative ideas, techniques and solutions to business and industry partners. Students will work collaboratively, manage projects, be creative and innovative, think critically, and solve problems as well as propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to effectively solve real-world, challenging problems with business and industry partners. Through project-based learning, students will explore the future of the aerospace industry and learn to apply those habits of behavior and mind unique to the field. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Aeronautics Engineering Applications

Course Number: TV18

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV17 SREB AC Advanced Aerospace Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This project-based learning course is for students who have successfully completed SREB AC Fundamentals of Aerospace Technology and SREB AC Advanced Aerospace Technology. Students will learn about systems such as flight control, remote-control vehicles and the virtual world. Students will learn to fly using flight simulators. They will work collaboratively to propose a shift from a VOR navigation system to a GPS system and determine the cost savings. In addition, students will develop rotor blades for helicopters and design and program an unmanned fl ying vehicle. Students will work collaboratively, manage projects, be creative and innovative, think critically, and solve problems as well as propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to eff ectively solve real-world, challenging problems with business and industry partners. Through project-based learning, students will explore the future of the aerospace industry and learn to apply those habits of behavior and mind unique to the field.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Astronautics Engineering Applications

Course Number: TV19

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV18 SREB AC Aeronautics Engineering Applications

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: Certified LabVIEW Associate Developer

Description: Students in this capstone course will focus on outer space and underwater applications. During the six projects, they will work collaboratively to design, build and test a laser communication system; develop a plan for space survivability in hostile environments; and utilize software to create a three-dimensional model of a satellite orbit and a team remote vehicle for underwater exploration. Students will work collaboratively, manage projects, be creative and innovative, think critically, and solve problems as well as propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to eff ectively solve real-world, challenging problems with business and industry partners. Through project-based learning, students will explore the future of the aerospace industry and learn to apply those habits of behavior and mind unique to the field. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC IST: The Nature of Science and Technology

Course Number: TR15

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This is a contextual-based course that introduces students to the core fundamental concepts of science and technology through authentic projects. Through these projects, students will develop an understanding of the relationship between the physical, biological and social world. Students will gain an understanding of the diff erences between science and technology, and learn that technology is a process for applying science. Students will develop a deeper understanding of scientifi c inquiry and the engineering design process when solving real-world problems. Students will experience the interaction of science, technology, engineering, math and literacy through a problem-based learning environment. Finally, the process will require students to use mathematics to analyze costs, develop budgets and make precise measurements to successfully implement project goals.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC IST: Core Applications of Science and Technology

Course Number: TR16

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR15 SREB AC IST: The Nature of Science and Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course uses the concepts learned from SREB AC IST: The Nature of Science and Technology to further develop students' problem-solving strategies and skills needed by the 21st-century workforce. Students will continue to explore emerging technologies and techniques in the context of addressing authentic projects. Key concepts introduced in this course include sustainability and environmental trends, systems thinking, and trend analysis and prediction. Through engagement, students will experience the necessary connection between literacy, mathematics and science in a variety of hands-on, real-world projects requiring them to apply academic and technical concepts and skills and technology to complete.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC IST: Impacts of Science and Technology

Course Number: TR17

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR16 SREB AC IST: Core Applications of Science and Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course will examine the past, present and future impact of science and technology on culture, society and the environment. Students will explore how their predecessors worked to solve some problems that still exist today, and examine the potential of using modern technology to solve those problems. From these explorations, students will engage in a variety of hands-on design projects that will address tradeoff s, optimization, interconnectivity and the nature of complex systems.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC IST: Creativity and Innovations

Course Number: TR18

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TR17 SREB AC IST: Impacts of Science and Technology

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: NI Certified LabVIEW Associate Developer (CLAD).

Description: This course will allow students to brainstorm, use invention, innovation, creativity, predictive analysis and use technology to solve real-world problems. Dimensions covered will include research and development, troubleshooting, experimentation, design failures, patents and trademarks, and design under constraints. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Technological Design

Course Number: TE12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TE11 Technology Engineering and Design

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course continues to apply the skills, concepts, and principles of design. The design fields of graphics, industrial design, and architecture receive major emphasis. Engineering content and professional practices are presented through practical application. Working in design teams, student apply technology, science, and mathematics concepts and skills to solve engineering and design problems. Students research, develop, test, and analyze engineering designs using criteria such as design effectiveness, public safety, human factors, and ethics. Art, English, Language Arts, Mathematics and science are required.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Technological Design and Innovation

Course Number: TE01

Recommended Maximum Enrollment: 20

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: The middle school course focuses on applying the design process in the invention or innovation of a new product, process, or system. Through engaging activities and hands-on projects, students focus on understanding how criteria, constraints, and processes affect designs. Emphasis is placed on brainstorming, visualizing, modeling, testing, and refining designs. Students develop skills in researching information, communicating design information, and reporting results. Activities are structured to integrate physical and social sciences, mathematics, English language arts, and art. Courselets include:

TE012YA Exploring Technology
TE012YB Exploring Engineering and Design

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Technology Engineering and Design

Course Number: TE11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: This course focus on the nature and core concepts of technology, engineering, and design. Through engaging activities and hands-on project-based activities, students are introduced to the following concepts: elements and principles of design, basic engineering, problem solving, and teaming. Students apply research and development skills and produce physical and virtual models. Activities are structured to integrate physical and social sciences, mathematics, English, language arts, and art.

* Due to potentially hazardous processes and equipment, a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Technological Systems

Course Number: TE02

Recommended Maximum Enrollment: 20

Hours of Instruction: 45 hours per courselet

Prerequisite: None

Aligned Career Technical Student Organization: Technology Student Association (TSA)

Aligned Industry Credential: None

Description: The middle school course focuses on students' understanding how technological systems work together to solve problems and capture opportunities. As technology becomes more integrated and systems become dependent upon each other, this course gives students a general background on the different types of systems, with specific concentration on the connections between these systems. Art, English Language Arts, Mathematics, and Science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

TRADE AND INDUSTRIAL EDUCATION

PROGRAM DESCRIPTION

Trade and Industrial Education is a secondary education program to prepare students for careers in eight of the 16 Career Clusters™. While completing course sequences in these Career Clusters™, students participate in instructional units that educate them in standardized industry processes related to concepts, layout, design, materials, production, assembly, quality control, maintenance, troubleshooting, construction, repair, and service of industrial, commercial, and residential goods and products. Where applicable, courses are aligned to industry certifications and/or credentials allowing students the opportunity to prepare for the associated specific certification/credential. Development of 21st century skills including collaboration, critical thinking, entrepreneurial skills, and problem solving is a part of each of the career pathways.

Trade and Industrial Education provides students the opportunity to advance in a wide range of trade and industrial occupations. They are prepared for initial employment, further education at the community college or university level, and/or business ownership. A balanced program of classroom study and practical work experiences produces competent workers who can manage resources, work cooperatively, organize and use information, understand complex systems, and apply appropriate technology. Work-based learning strategies including apprenticeship, cooperative education, mentorship, school-based enterprise, service learning, and job shadowing are available through the Trade and Industrial Education program.

NATIONAL STANDARDS

The United States Departments of Education and Labor have initiated public-private partnerships to develop voluntary skill standards for various industries. Skills and performance levels needed by the American workforce to be competitive have been identified.

The National Voluntary Occupational Skill Standards used as guides in Trade and Industrial Education follow.

Architecture & Construction

National Center for Construction Education and Research (NCCER) - With construction technologies training programs nationwide, NCCER has created performance-based curricula to unite the construction industry with secondary and postsecondary construction technology (carpentry), masonry, electrical trades and welding technology programs.

National Electrical Contractors Association (NECA) - NECA's Codes and Standards group works to influence the content of regulatory codes, and develops and publishes National Electrical Installation Standards (NEIS), the first quality standards for Electrical Trades.

Arts, A/V Technology & Communications

Graphic Arts Education Research Foundation (GAERF) - Secondary and postsecondary printing graphics programs align their curriculum to PrintED, GAERF's National Certification Skill Standards for the Graphic Communication Industry.

Certiport, a Pearson VUE business, is the world leader in performance- based certification exams and practice test solutions for academic institutions, workforce and corporate technology markets, delivered through an expansive network of over 12,000 testing centers worldwide.

Law, Public Safety, Corrections & Security

North Carolina Office of State Fire Marshall (OSFM) is the only provider of accredited certification for NC Firefighter I & II. OSFM curriculum and assessments are aligned to national standards. These certifications are transferrable to other states.

Manufacturing

The American Welding Society (AWS) sets skill standards for the welding trades. Its national skill standards are used in welding technology.

The Electronic Technicians Association – International (ETA-i) is the largest organization of electronic technicians in the United States. ETA-I provides industry recognized certifications for the electronics and green technology fields.

Transportation, Distribution & Logistics

National Automotive and Technicians Education Foundations, Inc. (NATEF)NATEF skills for the automotive and collision repair courses. In North Carolina, Service Technology and Collision Repair Technology are aligned to these national skill standards.

CAREER CLUSTER ALIGNMENT

Trade and Industrial Education programs align to the following Career Clusters™:

Architecture & Construction – Construction, Architectural Drafting
Arts, A/V Technology & Communications – Digital Media, Graphic Communications
Information Technology – Computer/Network Engineering
Law, Public Safety, Corrections & Security – Fire Fighting
Manufacturing – Metals Manufacturing, Electronics, Cabinetmaking, Alternative Energy, Welding, Science, Technology, Engineering & Mathematics - Engineering Drafting
Transportation, Distribution & Logistics – Automotive, Collision Repair

CERTIFICATIONS AND CREDENTIALING

Numerous industries offer national credentialing, certification, documentation, and registry services to accredit high school Trade and Industrial Education programs. Each has rigid inspection, testing, and acceptance criteria and maintains a national registry that provides portable credentials.

North Carolina also requires certain trades, crafts, and technicians to be licensed. Licensure usually requires meeting age, education, experience, and examination criteria. Most Trade and Industrial Education programs provide the skills and knowledge appropriate to acquire credentialing.

CAREER AND TECHNICAL STUDENT ORGANIZATION- SkillsUSA

SkillsUSA is the premier student leadership organization in the country with over 300,000 members nationwide. North Carolina is proud to be a strong component of the national organization and is one of the original states chartered in 1965 when the organization was started as VICA.

We offer many activities to enrich our students, advisors, and professional members throughout the year. The activities include professional and leadership development conferences, competitions that measure both technical and employability skills, and opportunities for scholarships, employment, and networking

Competitive skills and leadership events are held for regional, state, national, and international levels.

North Carolina site: http://www.skillsusanc.org
National site: http://www.skillsusa.org

Adobe Digital Design

Course Number: II32

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: II31 Adobe Visual Design

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Adobe Dreamweaver

Description: This course is a project-based course that develops ICT, career, and communication skills in Web design using Adobe tools. This course is aligned to Adobe Dreamweaver certification. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Adobe Video Design

Course Number: II33

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: II31 Adobe Visual Design

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Adobe Premiere

Description: This course is a project-based video course that develops career and communication skills in video production using Adobe tools. This course is aligned to Adobe Premiere certification. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Adobe Visual Design

Course Number: II31

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Adobe Photoshop, InDesign, Illustrator

Description: This course is a project-based course that develops ICT, career, and communication skills in print and graphic design using Adobe tools. This course is aligned to Adobe Photoshop, InDesign, and Illustrator certification. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Advanced Manufacturing I

Course Number: IM11

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: MSSC: Certified Production Technician- Safety
MSSC: Certified Production Technician- Quality

Description: This course is the first part of a two part sequence on the basic functional knowledge and skills needed in the advance manufacturing environment. This course covers introduction to manufacturing , safety, and quality and is based upon the Manufacturing Skills Standards Council's (MSSC) Certified Production Technicians certification (CPT). CPT is recognized by manufacturers in NC and the USA as a fundamental certification needed by advanced manufacturing production workers. Topics included in this course include 21st century skills, working in manufacturing, understanding customers' needs, communication strategies , how to develop and deliver training, manufacturing safety, personal protective equipment, fire and electrical safety, blueprint reading, basic measurement, precision tools, quality systems, corrective action process, and verification processes. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Advanced Manufacturing II

Course Number: IM12

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM11 Advanced Manufacturing I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: MSSC: Certified Production Technician- Process
MSSC: Certified Production Technician- Maintenance

Description: This course is the second part of a two part sequence on the basic functional knowledge and skills needed in the advance manufacturing environment. This course covers manufacturing processes, production and maintenance and is based upon the Manufacturing Skills Standards Council's (MSSC) Certified Production Technicians certification (CPT). CPT is recognized by manufacturers all over NC and the USA as a fundamental certification needed by advanced manufacturing production workers. Topics included in this course are identifying customer needs, determining resources available for production process, equipment setup, setting team, production goals, perform and monitor the process to make a product, document the process and determine product shipping or distribution , and performing routine maintenance of electrical, pneumatic, hydraulic, and machine automation. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Automotive Service I

Course Number: IT16

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IT11 Automotive Service Fundamentals

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This course develops automotive knowledge and skills in performing scheduled automotive maintenance, servicing, and basic testing of brakes, electrical systems, drivetrain, engine, HVAC and steering & suspension systems, emphasizing hands-on experience. As part of the NATEF accreditation, topics are aligned to the Maintenance and Light Repair(MLR) requirements. English language arts are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Automotive Service II

Course Number: IT17

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IT16 Automotive Service I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: ASE Entry-Level Certification Maintenance and Light Repair
ASE Entry-Level Certification-Brakes

Description: This course builds on the knowledge and skills introduced in Automotive Servicing I and develops advanced knowledge and skills in vehicle system repair and/or replacement of components in the brakes, electrical systems, drivetrain, engine, HVAC and steering & suspension systems, emphasizing hands-on experience. As part of the NATEF accreditation, topics are aligned to the Maintenance and Light Repair (MLR) requirements. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Automotive Service III

Course Number: IT18

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: Automotive Service II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: ASE Auto Maintenance and Light Repair Certification (G1)
ASE Entry-Level Certification- Electrical/Electronic Systems

Description: This course builds on the skills and knowledge introduced in Automotive Service I & II. Building advanced automotive skills and knowledge in vehicle servicing, testing, repair, and diagnosis of brakes, electrical systems, drivetrain, engine, HVAC and steering & suspension systems, while emphasizing hands-on experience. As part of the NATEF accreditation, topics are aligned to the Maintenance and Light Repair (MLR) requirements. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Automotive Services Fundamentals

Course Number: IT11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: S/P2- Mechanical Safety
S/P2- Mechanical Pollution Prevention

Description: This course introduces automotive safety, basic automotive terminology, system & component identification, knowledge and introductory skills in hand tools, shop equipment, basic servicing, and use of service information. Also careers and various job opportunities in the automotive repair industry will be discussed. As part of the NATEF accreditation, topics are aligned to the Maintenance and Light Repair (MLR) requirements. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Carpentry I

Course Number: IC21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC00 Core and Sustainable Construction

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course covers basic carpentry terminology and develops technical aspects of carpentry with emphasis on the development of introductory skills to include orientation to the trade, building materials, fasteners, and adhesives, hand and power Tools, reading plans and elevations, introduction to concrete, reinforcing materials, and forms, floor system construction procedures, wall and ceiling framing procedures, and basic stair layout. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Carpentry II

Course Number: IC22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC21 Carpentry I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Carpentry I and provides an emphasis on roof framing procedures, roofing applications, thermal and moisture protection, windows and exterior doors installation, exterior finishing, and the introduction to weatherization module. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Carpentry III

Course Number: IC23

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC22 Carpentry II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Carpentry II and develops advanced technical aspects of carpentry with the emphasis on commercial drawing, cold-formed steel framing construction methods, drywall installations, drywall finishing procedures, doors and door hardware installation, and windows, door, floor and ceiling trim procedures. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Collision Repair I

Course Number: IT31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IT30 Collision Repair Fundamentals

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This course focuses on non-structural repairs to automobiles. Using curriculum materials from the industry recognized I-CAR organization, students will learn about trim and hardware, material identification, steel cosmetic, straightening and plastic repair, moveable glass replacement, and bolted-on parts replacement.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Collision Repair II- Non-Structural

Course Number: IT32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IT31 Collision Repair I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: I-CAR Platinum- Non Structural Technician

Description: This course continues the focus on non-structural repairs to automobiles. Using curriculum materials from the industry recognized I-CAR organization, students will learn additional information about trim and hardware , material identification, steel cosmetic straightening and plastic repair, moveable glass replacement, and bolted-on parts replacement

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	Yes		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Collision Repair II- Refinishing

Course Number: IT33

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IT31 Collision Repair I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: I-CAR Platinum- Non Structural Technician

Description: This course focuses on refinishing automobiles. Using curriculum from the industry recognized I-CAR organization, students will learn about repairing and priming vehicles and vehicle parts; use and maintain a spray gun; mix, store, and dispose of hazardous materials; understand the corrosion protection process; sand, buff, and detail a refinished vehicle.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Collision Repair Fundamentals

Course Number: IT30

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This course introduces safety, basic collision repair terminology, system and component identification, knowledge and introductory skills in hand tools, shop equipment, basic servicing, and use of service information. Also career and various job opportunities in the collision repair industry will be discussed. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Core and Sustainable Construction

Course Number: IC00

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER
OSHA 10-Hour Construction Industry Certifications

Description: This course covers the National Center for Construction Education and Research (NCCER) Core certification modules required for all of the NCCER curriculum-area programs, and an additional Green module. The course content includes: basic safety, introduction to construction math, introduction to hand tools, introduction to power tools, introduction to construction drawing blueprints, material handling, basic communication skills, basic employability skills, and "Your Role in the Green Environment". The additional Green module has been added to provide students with instruction in the green environment, green construction practices, and green building rating systems. Also it will help students better understand their personal impacts on the environment and make them more aware of how to reduce their carbon footprint. English Language Arts and Mathematics are reinforced.
* Due to potentially hazardous equipment, a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Drafting I

Course Number: IC61

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Autodesk Certified User AutoCAD

Description: This course introduces students to the use of simple and complex graphic tools used to communicate and understand ideas, concepts and trends found in the areas of architecture, manufacturing, engineering, science, and mathematics, sketching and computer assisted design (CAD) skills and techniques. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Drafting II- Architectural

Course Number: IC62

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC61 Drafting I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Autodesk Certified User Revit

Description: This course focuses on the principles, concepts of architectural design , and use of Building Information Modeling (BIM), used in the field of architecture. An emphasis is placed on the use of 3D CAD tools in the design and execution of floor plans , foundation plans, wall sections, and elevation drawings. An understanding of 3D CAD concepts and terms , and the use of 3D CAD software such as REVIT , are essential to this course, and the required method of producing finished drawings. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Drafting II- Engineering

Course Number: IV22

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC61 Drafting I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Autodesk Certified User Inventor
Certified SolidWorks Associate- Academic (CSWA-A)

Description: This course teaches the development of knowledge and advanced skills in Engineering Drafting and Design. An understanding of 3D CAD concepts and terms, and the use of 3D CAD software such as INVENTOR or SolidWorks, are essential to this course, and the required method of producing finished drawings. Topics include cover advanced levels of Engineering Drafting and Design, Career Opportunities, Problem Solving, Manufacturing Processes, Parametric- Solid Modeling, Dimensioning and Tolerancing, Working Drawings, and 3D modeling. English language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Drafting III- Architectural

Course Number: IC63

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC62 Drafting II- Architectural

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Autodesk Certified Professional Revit

Description: This course introduces students to advanced architectural design concepts, and Building Information Modeling (BIM). Emphasis is placed on the continued use of 3D CAD tools and software such as REVIT, in the design and execution of site and foundation plans, electrical/lighting plans, stair/railing design, bath and kitchen details, multi-level floor systems, site development, renderings and walkthroughs, as well as small commercial building and design. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Drafting III- Engineering

Course Number: IV23

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IV22 Drafting II- Engineering

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Autodesk Certified Professional Inventor, or
Certified SolidWorks Professional- Academic (CSWP-A)

Description: This course teaches the development of knowledge and advanced skills in Engineering Drafting and Design. An understanding of 3D CAD concepts and terms, and the use of 3D CAD software such as INVENTOR or SolidWorks, are essential to this course, and the required method of producing finished drawings. Topics include cover advanced levels of Engineering Drafting and Design, Employment Requirements, Engineering Design Concepts and Principles, Advanced Manufacturing Processes, Advanced Parametric-Solid Modeling, Geometric Dimensioning and Tolerancing, Work Drawings and Assemblies, 3D Modeling, Sheet Metal Parts, and Professional Portfolio. English language arts and mathematics are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Electrical Trades I

Course Number: IC41

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC00 Core and Sustainable Construction

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course covers basic electrical trades' terminology and develops technical aspects of electrical trades with emphasis on the development of introductory skills, such as residential wiring, electrical installation, and service. Topics include orientation to the electrical trade, electrical safety, introduction to electrical circuits, electrical theory, introduction to the National Electric Code, device boxes, hand bending techniques, raceways and fittings, and introduction to weatherization. English language arts, mathematics, and science are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Electrical Trades II

Course Number: IC42

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC41 Electrical Trades I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Electrical Trades I and provides an emphasis on conductors and cables, construction drawings, residential electric services, electrical test equipment usage, alternating current (A/C) theory, grounding and bonding techniques, motors: theory and application, and electric lighting to structures. English language arts, mathematics, and science are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Electrical Trades III

Course Number: IC43

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC42 Electrical Trades II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Electrical Trades II and provides an emphasis on conduit bending techniques, pull and junction boxes, conductor installations, cable tray, conductor terminations and splices, circuit breakers and fuses, and control systems and fundamental concepts. Upon successful completion of the this course, students should be prepared to enter the workforce as an electrical helper and/or continuing education towards degrees in Construction Management or Electrical Engineering. English language arts, mathematics, and science are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Electronics I

Course Number: IM31

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: ETA: EM1

Description: This course covers Direct Current (DC) Basics and is aligned to the Electronic Technicians Association (ETA) EM1 certification. Topics include a) basic electrical theory, b) magnetism, c) safety, d) electronic equipment, e) electronic components, f) Ohms Law. Mathematics for electronics, g) electronic measurements, h) series circuits, i) parallel circuits, j) series/parallel circuits, and k) battery power supplies.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Electronics II

Course Number: IM32

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM31 Electronics I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: ETA: EM4

Description: This course covers Digital Basics and is aligned to the Electronic Technicians Association (ETA) EM4 certification.. Topics include: a) numbering systems and conversions, b) block diagrams—schematics-wiring diagrams, c) test equipment and measurements, d) safety, e) theory of digital logic functions and circuitry, and f) computer electronics. English language arts, mathematics, and science are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Emergency Management I

Course Number: IP51

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP22 Emergency Medical Technology I, and IP32 Firefighter Technology II; OR

IP 42 Law & Justice II, and IP12 Public Safety II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NC Emergency Managment I

Description: This course is the first in a series of courses aligned to the Emergency Management certifications from FEMA and are recommended by the North Carolina Emergency Management Office at the NC Department of Public Safety as appropriate for high school students. These certifications are those required by professional in this field. The course includes skills in each area, using resources from the community to help deliver instruction to the students. English, language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	No
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Emergency Management II

Course Number: IP52

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP51 Emergency Management I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NC Emergency Managment II

Description: This course is the second in a series of courses aligned to the Emergency Management certifications from FEMA are recommended by the North Carolina Emergency Management Office at the NC Department of Public Safety as appropriate for high school students. These certifications are those required by professional in this field. The course includes skills in each area, using resources from the community to help deliver instruction to the students. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	No		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Emergency Medical Technology I

Course Number: IP21

Recommended Maximum Enrollment: 15

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: English II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This course is aligned to the EMT Basic certification available from the North Carolina Office of Emergency Medical Services and is part I of a two course sequence require to meet the mandatory hours of training. The course includes skills in each area, using resources from the community to help deliver instruction to the students. English language arts are reinforced. Students must be 17 years of age prior to enrollment per NCOEMS requirements.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Emergency Medical Technology II

Course Number: IP22

Recommended Maximum Enrollment: 15

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP21 Emergency Medical Technology I and English III

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Emergency Medical Technician Basic

Description: This course is aligned to the EMT Basic certification available from the North Carolina Office of Emergency Medical Services and is part II of a two course sequence require to meet the mandatory hours of training. The course includes skills in each area, using resources from the community to help deliver instruction to the students. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Firefighter Technology I

Course Number: IP31

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCOSFM Credential - Firefighter Technology I

Description: This course covers part of the NC Firefighter certification modules required for all Firefighters in North Carolina. The modules include: Orientation and Safety Health and Wellness; Fire Behavior; Personal Protective Equipment; Fire Hose, Streams, and Appliances, Portable Extinguishers; Foam Fire Streams; and Emergency Medical CARC. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Firefighter Technology II

Course Number: IP32

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP31 Firefighter Technology I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCOSFM Credential - Firefighter Technology II

Description: This course covers additional NC Firefighter certification modules required for all Firefighters in North Carolina. The modules include: Building Construction; Ropes; Alarms and Communications; Forcible Entry; Ladders; Ventilation; Loss Control. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Firefighter Technology III

Course Number: IP33

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP32 Firefighter Technology II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCOSFM Credential - Firefighter Technology III

Description: This course covers part of the NC Firefighter certification modules required for all Firefighters in North Carolina. The modules include: Water Supplies, Sprinkles, Fire & Life Preparedness, Rescue, Mayday, and Safety & Survival. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Foundations of Information Technology

Course Number: BI10

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Introduction to Trade and Industrial Education

Course Number: IU10

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This course will introduce students to concepts needed for careers in trade and industry professions. Skillsets specific to Trade and Industry careers will be provided to include key concepts from the systems used in manufacturing processes and will incorporate problem-solving, design, technical communication, modeling, testing, evaluation, and implications of technology. Activities associated with the major program areas of Trade and Industrial Education will provide practical applications to enhance student learning. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Law and Justice I

Course Number: IP41

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: Students desiring to pursue a career in Law and Justice will examine the basic concepts of law related to citizens' right and officers responsibilities to maintain a safe society. This course begins with a study of various careers in public safety. The course will explore the history and development of law enforcement in the United States. Students will then examine the components of the criminal justice system, including the roles and responsibilities of the police , courts, and corrections. Additionally, students will learn the classification and elements of crimes. Students will receive instruction in critical skill areas including communicating with diverse groups, conflict resolution, the use of force continuum, report writing, operation of police and emergency equipment, and courtroom testimony. Career planning and employability skills will be emphasized. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Law and Justice II

Course Number: IP42

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP41 Law and Justice I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: International Federation of Protection Officers: Certified Protection Officer

Description: This course emphasizes "need-to-know" information for protection officers throughout the security industry and is aligned to the International Federation of Protection Officers (IFPO) certification as a Certified Protection Officer (CPO). Course content includes: Foundations in Law Enforcement and Protective Services. Communications in Law Enforcement and Protective Services, Protection Officers Functions, Crime Prevention and Physical Security, Safety and Fire Protection, Information Protection, Deviance Crime and Violence, Risk and Threat Management, Procedures in Investigations, Legal Aspects of Security, Procedures for Officer Safety and Used of Force, Procedures for Relations with Others, and AHA First Aid Certification. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Masonry I

Course Number: IC11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC00 Core and Sustainable Construction

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course covers basic masonry terminology and develops technical aspects of the masonry industry with emphasis on the development of introductory skills to include the introduction to masonry, masonry tools and equipment, measurement, drawings and specifications, mortar procedures, and masonry units and installation techniques. Mathematics and English language arts are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Masonry II

Course Number: IC12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC11 Masonry I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Masonry I and provides an emphasis on residential plans and drawing interpretation, residential masonry, grout and other reinforcement processes, metalwork in masonry, and the introduction to weatherization. English language arts and mathematics are reinforced. *Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Masonry III

Course Number: IC13

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IC12 Masonry II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NCCER

Description: This course builds on skills mastered in Masonry II and provides an emphasis on advanced laying techniques, construction techniques and moisture control procedures, and construction, inspection and quality control processes. Introductory skills for the Crew Leader are also introduced in this course. * Due to potentially hazardous processes and equipment, a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Metals Manufacturing Technology I

Course Number: IM41

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NIMS Job Planning, Benchmark, and Layout
NIMS Measurement, Materials, and Safety

Description: This course introduces various processes and job opportunities in manufacturing with emphasis on machining metal parts. Topics include safety, math, measurement, blueprint reading, layout, bench work, sawing, drilling, turning, and milling. Mathematics and English language arts are reinforced.
* Due to potentially hazardous processes and equipment, a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Metals Manufacturing Technology II

Course Number: IM42

Recommended Maximum Enrollment: 20

Hours of Instruction: 270 (block) 300 (regular)

Prerequisite: IM41 Metals Manufacturing Technology I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NIMS Manual Milling Skills
NIMS Job Planning, Benchmark, and Layout
NIMS Measurement, Materials, and Safety

Description: This course provides advanced instruction in manufacturing and introduces computer-assisted drafting/manufacturing and numerical control processes. Topics include safety, environmental protection, quality control, metallurgy, materials, layout, assembly, sawing, turning, milling, grinding, computer numerical control, computer-aided manufacturing, welding, and maintenance. English language arts and mathematics are reinforced.
* Due to potentially hazardous processes and equipment, a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Project Management I

Course Number: CS11

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Project Management II

Course Number: CS12

Please refer to the Business, Finance, and Information Technology Education program area for the full course description.

Public Safety I

Course Number: IP11

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: FEMA: NIMS: IS-100.B, IS-700.A, IS-200.B, IS-800.B

Description: This course provides basic career information in public safety including corrections, emergency and fire management, security and protection, law enforcement, and legal services. FEMA certifications NIMS 100,200, 700, 800 are also a part of this course. Additionally students will develop a personal plan for a career in public safety. The course includes skills in each area, using resources from the community to help deliver instruction to the students. English language arts are reinforced.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Public Safety II

Course Number: IP12

Recommended Maximum Enrollment: 25

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IP11 Public Safety I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Community Emergency Response Team (CERT)- NC-317

Description: This course provides a deeper level of understanding of career information in public safety by focusing on the Community Emergency Response Team (C.E.R.T.) Certification. CERT is a Federal Emergency Management Administration (FEMA) developed certification that incorporates all areas of public safety. Additionally, FEMA ICS300 Intermediate Incident Command System is covered in this course.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Introduction to Automated Materials Joining

Course Number: IM71

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: This project-based learning course introduces students to the fundamentals of automated materials joining. Students learn how to design, build and virtually test their designs using Solid Edge software. Using the engineering design process, students learn how to manage projects; research topics; plan for the building and testing of a prototype; analyze their results; make recommendations for improvement and communicate solutions to an authentic audience. Student teams create jigs, fixtures and an automated clamping system to fasten material. They program a robotic arm to control the spreading of adhesive, and design, build and test an automation system for joining the materials. Automated materials joining technology/industry standards and academic literacy, mathematics and science standards are applied to develop prototypes. Students learn how to collaborate within diverse teams, manage projects, think critically, document research, write reports and communicate results to authentic audiences. Further, students apply science, literacy, mathematics and technical skills to effectively solve challenging real-world problems with business and industry partners.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Applications in Automated Materials Joining

Course Number: IM72

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM71 SREB AC Introduction to Automated Materials Joining

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: Building on the concepts learned in SREB AC Introduction to Automated Materials Joining, students engage in more complex materials science applications beginning with a reverse engineering project. Students disassemble and analyze a product to determine how they might improve its performance. Heat is applied to materials to change their molecular structure and LabVIEW is used to measure the changes. Different joints are explored and tested using filler metals. Students collaborate to create an automated quality control vision system to govern placement in an automated assembly system. They learn how to write quality engineering reports that communicate the process used and detail their findings. Students sharpen their skills by presenting to authentic audiences. Students learn how to collaborate within diverse teams, manage projects, think critically, document research, write reports and communicate results to authentic audiences. Further, students apply science, literacy, mathematics and technical skills to effectively solve challenging real-world problems with business and industry partners.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Advanced Concepts in Materials Joining

Course Number: IM73

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM72 SREB AC Applications in Automated Materials Joining

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: None

Description: Students apply their knowledge and skills to produce new prototypes. They begin with programming a robot to create acceptable welds. They work with industry partners in a quality control lab where they examine the molecular changes in a tank that failed and test their recommendations to determine if they solved the problem. Students experiment with welding dissimilar metals utilized in battery applications. Working with a business partner, students automate a process to decrease assembly time and solve real-world problems through the application of Total Quality Management principles. Students focus on proposal writing as well as math and science standards integrated in the projects. Students learn how to collaborate within diverse teams, manage projects, think critically, document research, write reports and communicate results to authentic audiences. Further, students apply science, literacy, mathematics and technical skills to effectively solve challenging real-world problems with business and industry partners.

*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Projects in Automated Materials Joining

Course Number: IM74

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM73 SREB AC Advanced Concepts in Materials Joining

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: NI Certified LabVIEW Associate Developer (CLAD) and International Fluid Power Society Certifications for Pneumatic and Hydraulics.

Description: This is a culminating course where students apply what they have learned to real-world scenarios. Teams work collaboratively to analyze problems, create solutions and focus on methods of automation analysis to solve the seven issues of waste. They create a conceptual model of an amusement park ride that uses welds that can withstand high impact loads. Students design, build and test a product for automated assembly and create and test an automated process to assemble the prototype. Two projects require students to write a white paper. Depending on state policy, students who successfully complete the course may be eligible for articulated or dual college credit. Students learn how to collaborate within diverse teams, manage projects, think critically, document research, write reports and communicate results to authentic audiences. Further, students apply science, literacy, mathematics and technical skills to effectively solve challenging real-world problems with business and industry partners.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Clean Energy Systems

Course Number: TV11

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course exposes students to three sources of renewable energy: wind, solar and biofuels. Working with solar, thermal, chemical and mechanical sources of clean energy teaches students how to apply physics, geography, chemistry, biology, geometry, algebra and engineering fundamentals. Students learn the most efficient and appropriate use of energy production as they explore the relevant relationships among work, power and energy. Students will engage in a wide variety of handson projects and lab activities that both test their knowledge and illustrate the interrelationships between the various forms of clean energy.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Clean Energy Applications

Course Number: TV12

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV11 SREB AC Clean Energy Systems

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course builds on the foundation of SREB AC Clean Energy Systems and introduces nuclear power, steam generation, fuel cells, geothermal power, water power, AC/DC power generation, heat transfer and the laws of thermodynamics. In addition, students now use chemical and thermal energy principles to create, store and use energy efficiently to power a variety of mechanical and electrical devices. Students will engage in a variety of hands-on design projects to demonstrate principles using advanced technology hardware and software.*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Clean Energy Strategies

Course Number: TV13

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV12 SREB AC Clean Energy Applications

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: Students in this course utilize applicable skills from the foundational courses to tackle challenges associated with the implementation of clean energy technology. The hands-on projects encountered during this course will require students to address specific issues related to providing portable power in any situation, developing new energy storage systems, increasing the efficiency of the modern home, and designing more energy efficient buildings and homes.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Clean Energy Innovations

Course Number: TV14

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV13 SREB AC Clean Energy Strategies

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: NI Certified LabVIEW Associate Developer (CLAD)

Description: The innovations course is the fourth and final course in the Clean Energy Technology Pathway Program. The course will provide students the opportunity to work independently with open-ended, problem-solving scenarios to create an original solution in the area of clean energy entrepreneurship or clean energy research and development. Students will collaborate with a mentor to conduct applied research around a defi ned research problem, develop solutions, collect and analyze relevant data, evaluate their solutions, and present their findings in public venues and competitions.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Energy and Power Foundations

Course Number: TV21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course engages students in a variety of hands-on, authentic projects to learn about energy and power methods through the design and construction of motors, pumps, heat exchangers, hydraulics and pipeline systems. These are the technologies used in large power plant systems to run and maintain processes in energy generation plants. Through contextual projects, students will learn and apply physics, chemistry, fluid mechanics, thermodynamics, algebra and statistics in learning how these systems interact in the energy and power arena. Students will learn how engineers and technicians use these systems in the real world to optimize efficiency.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Energy Transmission and Distribution

Course Number: TV22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV21 SREB AC Energy and Power Foundations

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: This course focuses on energy transmission and consumer usage. Through projects, students will be introduced to AC and DC power, transformers, the electrical grid and Smart Grid, and consumer load on the electrical system. To complete projects, students will use Ohm's law, Joule's law of heating, root mean square, Pythagorean Theorem and trigonometric principles to understand how energy travels along power lines and is converted from direct current to alternating current to end up, ultimately, in homes and businesses. Students will gain an understanding of how power companies move power — stepping it up and down to meet the needs of the end-user — by designing working transformers, capacitors, inverters and a power supply.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Electronics and Control Systems

Course Number: TV23

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV22 SREB AC Energy Transmission and Distribution

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: None

Description: In this course, students will build on the knowledge and experience gained in the SREB AC Energy Transmission and Distribution course. Through projects, students will apply their knowledge to more advanced systems and learn how to program and use National Instrument's LabVIEW software and the myDAQ data acquisition device to work as engineers in making and analyzing countless scientifi c measurements. Students will study advanced topics in energy and power such as smart-home automation, plant-level process control, natural gas pipeline monitoring, energy storage and wind power. Each project presents students with a design problem that will require them to not only design and build a prototype, but also develop the software program that will test the prototype and gather measurable, quantifiable data.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Advanced Science and Engineered Systems

Course Number: TV24

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: TV23 SREB AC Electronics and Control Systems

Aligned Career Technical Student Organization: Technology Students Association (TSA) or SkillsUSA

Aligned Industry Credential: NI Certified LabVIEW Associate Developer (CLAD) and International Fluid Power Society Certifications for Pneumatic and Hydraulics.

Description: Through well-developed projects in this advanced course, students will assume the roles of building technicians, design engineers, recreational engineers, electrical technicians and CEOs, while learning about real-world energy and power issues. Students will work with industry mentors to independently tackle real-world scenarios in the energy and power field. The projects in this course scaff old to allow students more choice in determining the final product for each project. This course incorporates knowledge of multiple sources of energy, engineered systems, societal impact and "the business of energy" as students engage in projects involving maglev trains, advanced concepts in steam energy, carbon sequestration and coal, hydraulic fracturing, alternative forms of fuel in transportation and environmental compliance.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Introduction to Logistics

Course Number: IK41

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA) or SkillsUSA

Aligned Industry Credential: None

Description: This course engages students in solving contextual problems related to the concepts of supply chains, warehouse location, contingency planning, insourcing and outsourcing, and expanding existing supply chains. These concepts form the basis of global logistics and supply chain management and help students understand how professionals examine options to maximize the use of resources across distribution networks.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Functional Areas in Logistics

Course Number: IK42

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IK41 SREB AC Introduction to Logistics

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA) or SkillsUSA

Aligned Industry Credential: None

Description: This course compels students to explore deeper understandings of the concepts they discovered in the previous course as they navigate projects on warehouse design, inventory management, transportation optimization, information technology, emergency responsiveness and the supply chain for manufacturing. Students use their experiences in this course to discover ways that professionals minimize the outlay of resources while improving efficiency and ability in the global market.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Global Logistics Management

Course Number: IK43

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IK42 SREB AC Functional Areas in Logistics

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA) or SkillsUSA

Aligned Industry Credential: None

Description: This advanced course offers challenging projects that require students to look at the global implications of the industry in more earnest as they experiment with decisions over intermodal transportation, route selection, international shipping regulations, emergency preparedness, cultural awareness, business ethics and international trade restrictions related to a distribution strategy. Students develop their understanding of the industry in this course and truly build their awareness of the challenges of doing business in a world with multiple borders that must be traversed.
*Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

SREB AC Logistics and Supply Chain Management

Course Number: IK44

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IK43 SREB AC Global Logistics Management

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA) or SkillsUSA

Aligned Industry Credential: None

Description: This advanced course allows students to see the implications of all the concepts they learned in the previous three courses as they consider environmental impact, selecting business partners in a global and domestic chain, information technology and decisions regarding e-commerce. Students explore the ongoing need to balance dependability and resource outlay in meeting customer demands around the world. Projects will expand students' decision-making skills as they tackle issues related to transportation, distribution networks and manufacturing. *Course enrollment limited to 20 to ensure safety in laboratory settings.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	No		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Welding Technology I

Course Number: IM61

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: OSHA-10- Hour Industry Certification
S/P2 - Welding Safety and Pollution Prevention

Description: This course covers basic industrial and construction welding practices, characteristics, and entry level skills. Topics include safety, tools and equipment, measurement, thermal cutting processes, base metal preparation and shielded metal arc welding (SMAW). Arts, English, Language Arts, Mathematics, and science are reinforced.

* Per AWS, The trainee/instructor ratio for each course should be kept as low as possible. A reasonable figure would be fifteen (15) welding trainees to one (1) welding instructor. However, this ratio should never exceed the number of work stations in the laboratory. Twenty (20) welding personnel to one (1) instructor would be the maximum recommended acceptable ratio.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	No		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	No
Cooperative Education	No		**School Based Enterprise**	No
Entrepreneurial Experiences	No		**Service Learning**	Yes
Internship	No		****Work-Based Learning descriptions can be found on page 3.**	

Welding Technology II

Course Number: IM62

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM61 Welding Technology I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: AWS SENSE- Shielded Metal Arc Welding (SMAW)
AWS SENSE - Thermal Cutting Process - Plasma
AWS SENSE - Thermal Cutting Process - Oxy-Fuel

Description: This course introduces advanced welding and cutting practices used in industry and construction and emphasizes hands-on experience. Topics include safety, plasma arc cutting(PAC), inspection, weld fit-up and testing, metal properties, and shielded metal (SMAW) arc welding. Arts, English language arts, mathematics, and science are reinforced.

* Per AWS, The trainee/instructor ratio for each course should be kept as low as possible. A reasonable figure would be fifteen (15) welding trainees to one (1) welding instructor. However, this ratio should never exceed the number of work stations in the laboratory. Twenty (20) welding personnel to one (1) instructor would be the maximum recommended acceptable ratio.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Welding Technology III

Course Number: IM63

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM62 Welding Technology II

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: AWS SENSE- Gas Metal Arc Welding (GMAW) Short Circuit
AWS SENSE- Gas Metal Arc Welding (GMAW) Spray
AWS SENSE- Flux Cored Arc Welding (FCAW) Gas
AWS SENSE- Flux Cored Arc Welding (FCAW) Self Shielded

Description: This course is designed to continue the development of advanced welding and cutting practices used in industry and construction and emphasizes hands-on experience. Further emphasis is placed on topics covered in Welding Technology II, and more, such as safety, weld fit-up and testing, metal properties, gas metal arc welding (GMAW), flux cored arc welding (FCAW), and gas tungsten arc welding (GTAW). Arts, English language arts, mathematics, and science are reinforced.

* Per AWS, The trainee/instructor ratio for each course should be kept as low as possible. A reasonable figure would be fifteen (15) welding trainees to one (1) welding instructor. However, this ratio should never exceed the number of work stations in the laboratory. Twenty (20) welding personnel to one (1) instructor would be the maximum recommended acceptable ratio.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	Yes		**Service Learning**	Yes
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Woodworking I

Course Number: IM21

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: None

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Woodwork Career Alliance Sawblade Certificate
OSHA 10-Hour Construction Industry Certification

Description: This course introduces career information, employment opportunities, and skills required for work in the woodworking and cabinetmaking industry. Topics include the woodworking industries, health, and safety design and layout, materials, hand tools, power tools, portable and stationary, preparation, construction and assembly, and finishing. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

Woodworking II

Course Number: IM22

Recommended Maximum Enrollment: 20

Hours of Instruction: 135 (block) 150 (regular)

Prerequisite: IM21 Woodworking I

Aligned Career Technical Student Organization: SkillsUSA

Aligned Industry Credential: Woodwork Career Alliance Sawblade Certificate
OSHA 10-Hour Construction Industry Certification

Description: The course teaches the development of knowledge and advance skills in the woodworking and cabinetmaking industry. Emphasis is placed on advanced principles applied to the woodworking and cabinetmaking industry. Topics include advanced levels of the cabinetmaking industry, health and safety, design and layout, materials, hand tools, power tools, portable and stationary, preparation, construction and assembly, and finishing. English language arts and mathematics are reinforced.
*Due to potentially hazardous processes and equipment a maximum enrollment of 20 is recommended.

Work-Based Learning Opportunities appropriate for this course include:				
Apprenticeship	Yes		**Job Shadow**	Yes
Business and Industry Field Trip	Yes		**Mentorship**	Yes
Cooperative Education	Yes		**School Based Enterprise**	Yes
Entrepreneurial Experiences	No		**Service Learning**	No
Internship	Yes		****Work-Based Learning descriptions can be found on page 3.**	

CTE Advanced Studies

Course Number: CS95

Recommended Maximum Enrollment: 25

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: This culminating course is for juniors and seniors who have earned two technical credits, one of which is a completer course, in one Career Cluster. The Advanced Studies course must augment the content of the completer course and prepare students for success in transitioning to postsecondary education and future careers. Students work under the guidance of a teacher with expertise in the content of the completer course in collaboration with community members, business representatives, and other school-based personnel. The four parts of the course include writing a research paper, producing a product, developing a portfolio, and delivering a presentation. Students demonstrate their abilities to use 21st century skills. Competitive events, community service, and leadership activities provide the opportunity to apply essential standards and workplace readiness skills through authentic experiences.

CTE Apprenticeship

Course Number: CS96

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: Two technical credits in one Career Cluster

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Students who participate in apprenticeships or pre-apprenticeships through the North Carolina Department of Commerce can also earn CTE credit while they earn hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.

CTE Internship

Course Number: CS97

Recommended Maximum Enrollment: 0

Hours of Instruction: 1 credit

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: A CTE Internship allows for additional development of career and technical competencies within a general career field. Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

CTE Career and College Promise

Course Number: Various

Recommended Maximum Enrollment: Varies

Hours of Instruction: Does not apply

Prerequisite: None

Aligned Career Technical Student Organization: An association for Marketing Education students (DECA), Future Business Leaders of America (FBLA), National FFA Organization (FFA), Family, Career and Community Leaders of America (FCCLA), Future Health Professionals (HOSA), SkillsUSA, and Technology Student Association, (TSA)

Aligned Industry Credential: None

Description: Career and College Promise provides a way for any North Carolina high school student in good academic standing who meets eligibility requirements to take community college courses while still in high school. Students can combine high school and postsecondary courses to earn a credential, certificate, or diploma in a technical field and meet requirements for CTE concentration. Credit may be transferrable to another North Carolina community college, to UNC System institutions, and to many of the state's independent colleges and universities. Students should work with their school counselor to determine what CTE pathways are available at their local community college or in what other ways they can access this program.

APPENDIX A. LOCAL COURSE OPTIONS

If a local education agency recognizes needs that are not addressed by courses in the Essential Standards document, that local education agency can request authorization to offer a Local Course Option. A Local Course Option requires considerable advanced planning and preparation. Each local course must be approved before it is advertised and offered to students.
A Local Course Option should be used to:

- Provide for innovation, but not duplication of courses in the Essential Standards.
- Meet unique local needs.
- Work in partnership with local stakeholders.
- Offer career potential that is permanent and not transitory or temporary in nature.
- Assure employment opportunities for local students.
- Support the purposes of CTE.
- Promote high-skill, high-wage, high-demand, and emerging occupations.

The request must be made and approved before the Local Course Option can be advertised and offered. Timelines, forms, and processes can be found in the Local Course Application folder on the secure CTE FTP site and on the Local Planning System.

APPENDIX B. DEFINITIONS USED IN THIS DOCUMENT

Career Clusters™ are groupings of occupations used as an organizing tool for curriculum design and instruction. The Career Cluster approach makes it easier for students to understand the relevance of their required courses and helps them select their elective courses more wisely.

Career pathways are sub-groupings of occupations within a Career Cluster used as an organizing tool for curriculum design and instruction. Occupations are grouped into pathways based on the set of common knowledge and skills required for career success.

Foundation course provides fundamental knowledge and skills needed for student success in secondary and postsecondary education and careers in the Career Cluster.

Enhancement course augments related knowledge and skills developed in foundation courses and provides for success in postsecondary education and careers in the Career Cluster.

Completer course is the second or third course in a series that builds upon skills acquired in the previous course(s). A completer course has a prerequisite. Completer courses are identified by an asterisk (*).

Concentrator is a student who has earned four or more technical credits in a Career Cluster, at least one of which is a completer course. The student may earn all four credits from foundation courses or three from foundation and one from enhancement courses for the Career Cluster.

Curriculum partnering opportunities are developed by national organizations, foundations, consortia, industry, and other curriculum providers. Partnering opportunities are approved by the Division of Career and Technical Education. To be approvable, curriculum partnering opportunities must include a valid and reliable measure of technical attainment that meets the state timeline for federal reporting.

Recommended maximum enrollment indicates the recommended maximum number of students who should be enrolled in a course based on best educational practice.

Maximum enrollment indicates the maximum number of students who can be enrolled in a course based on legal and safety requirements.

Work-based learning experiences connect school-based learning with the workplace to integrate core and technical instruction. ***Service learning*** is a work-based learning strategy that combines community service with career and academic learning goals.

Cooperative education provides on-the-job training for students through a cooperative agreement among the school, the employer, the parents/guardian, and the student.

Pilot course is used to test and evaluate student interest and feasibility of a new course before full-scale development and implementation of all course components. During the pilot course year, adjustments will be made to improve or enhance course materials. At some designated point, a decision will be made whether or not to continue or terminate the development of the course.

Field test course is complete with all components. The primary intent of the field test year is to collect reliability data on all assessment items before the items are divided into the classroom and secure assessment banks. A secondary intent of the field test year is to collect feedback from teachers about the blueprint weighting, unpacked content, and instructional activities and resources used in the course.

Credential provides evidence of authority, status, rights, and entitlement to privileges. Typically, a credential is a paper document.

Certification is industry recognition or confirmation of subject knowledge or the ability to perform specific tasks. The focus is on assessing the attainment of current experience, knowledge, and skill base.

License is permission from a government authority to perform certain tasks.