**Career Concentrations**

**available to**

**Cameron High School Students**

**2014-15**

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**Introduction and Purpose**

This booklet has been put together for the use of Cameron students in planning their academic program and making course selections. It contains a listing of the Career Technology Education concentration (completer) programs that are offered to Cameron High School students. Some are offered at Cameron High School, while others are offered at John Marshall High School. *Concentrations offered at Cameron are unlimited in space for Cameron students. Concentrations at John Marshall are limited to three seats for Cameron students per class.*

As you read through this booklet, you will see that there are career clusters which are described and then divided into pathways which are also described. Then the concentrations are explained and the required classes listed.

If you have further questions regarding this information, please see your counselor.

**AGRICULTURE, FOOD, AND NATURAL RESOURCES CLUSTER**

**Cluster Description:**

The agricultural education program is built on the three core areas of classroom/laboratory instruction, supervised agricultural experience programs and FFA student organization activities/opportunities. The program is designed for delivery through these three components as follows:

* Classroom/Laboratory Instruction – quality instruction in and about agriculture that utilizes a "learning by doing" philosophy.
* Supervised Agricultural Experience Programs – all students are expected to have an agriculturally related work-based learning experience while enrolled in agricultural education courses.
* FFA Student Organization activities/opportunities – FFA activities are an integral part of the agricultural education program that all agricultural education students should participate in if they are to fully benefit from their enrollment in the program.

A quality agricultural education program has a balanced utilization of these three core components. These components are best carried out when the following strategies are employed:

* Community-Based Planning – involvement of the school administration and community in the planning and coordination of the program is essential to success.
* Professional Development – agriculture teachers take advantage of opportunities for professional development and growth.
* Partnerships – the development of alliances with community and business leaders is essential for program success.
* Marketing – every agricultural education program needs a successful marketing strategy in place to attract and retain students and the support of the community that is being served.

When these components and strategies are in place, program success will occur.

**Agribusiness Systems Pathway**

**Pathway Description:**

The Agribusiness Systems pathway focuses on entrepreneurial and technical skills and careers in the broad spectrum of Agriculture, Food, and Natural Resources.

**Concentration: AG0120 Agribusiness Systems - CHS**

**Courses**: 0101 Fundamentals of Agriculture

0102 The Science of Agriculture

0134 Agricultural Experience Program

Agribusiness Specialization

**Concentration Description:**

The Agribusiness Systems concentration focuses on entrepreneurial and technical skills and careers in the broad spectrum of Agriculture, Food, and Natural Resources. This concentration offers the most flexibility of all agriculture concentrations for students to select a specialization from many areas: Forestry, Horticulture, Advanced Agriculture Principles, Animal Science, Agriculture Mechanics, Animal Processing, Natural Resources, Biotechnology, Entrepreneurship and Food Science.

**Course Descriptions:**

**0101 Introduction to Agriculture, Food, and Natural Resources**

This is a core course for the Agriculture, Food and Natural Resources Career Cluster that builds a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of agriculture, food and natural resources careers. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0102 The Science of Agriculture**

This course focuses on the basic scientific principles and processes related to the production of plants and animals for the food and fiber systems. Topics of instruction include basic understanding of the livestock/poultry industry and its various components, career opportunities, soil science, crop science/agronomy, weed science, basic agricultural mechanics and related industry careers, environmental stewardship, entrepreneurship, and leadership/personal development. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0134 Agricultural Experience Program**

The Supervised Agricultural Experience program is a hands-on, student planned way for them to apply skills learned in the classroom to real world agricultural experiences. With help from their agricultural teachers, students develop an SAE project based on one or more SAE categories: Entrepreneurship, Placement, Research and Experimentation and Exploratory.

***Agribusiness Specialization: Choose One***

**0183 Forest Management**

This course is designed to be a basic forestry course for students interested in forestry. The course will covers topics on best management practices, timber felling basics, dendrology, tree measurement basics, water quality, forest fire, read topography maps and basic log road layout, forest hazards ID, basic forestry concepts of edge, diversity, succession and structure, forest business and economics, forest insects, forest disease, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0212 Horticulture**

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, career opportunities, leadership development and entrepreneurial skills. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives. With help from their agricultural teachers, students develop an SAE project based on one or more SAE categories: Entrepreneurship, Placement, Research and Experimentation and Exploratory.

**0136 Advanced Principles of Agriculture**

This course provides instruction that expands the scientific knowledge and technical skills gained in The Science of Agriculture. Topics of instruction include livestock/poultry industry and its various components, career opportunities, soil science, crop science/agronomy, weed science, agricultural machinery and related industry careers, environmental stewardship, entrepreneurship, and leadership/personal development. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0140 Animal Production and Management**

This course is designed to be a core course in the Animal Systems concentration. The course will cover topics on animal restraint, animal management techniques, animal health and welfare, balancing rations, pedigree analysis, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0112 Fundamentals of Agriculture Mechanics**

This course introduces the knowledge and skills for applying the physical science principles and principles of operation and maintenance to mechanical equipment, welding and fabrication, structures, plumbing, electrical wiring, power utilization, entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0139 Fundamentals of Animal Processing**

This course introduces students to the principles and applications of animal processing. Students will learn carcass grading, primal and retail cuts, workplace safety, how to process primal and retail cuts, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**Food Products and Processing Systems Pathway**

**Pathway Description:**

The Agribusiness Systems pathway focuses on entrepreneurial and technical skills and careers in the broad spectrum of Agriculture, Food, and Natural Resources.

**Concentration**: **AG0230 Animal Processing - CHS**

**Courses**: 0101 Introduction to Agriculture, Food, and Natural Resources

0139 Fundamentals of Animal Processing

0134 Agricultural Experience Program

Animal Processing Specialization

**Concentration Description:**

The Animal Processing Systems pathway focuses on entrepreneurial and technical skills and careers in the animal processing industry. Specializations for this concentration prepare students for the retail industry and the commercial plant industry.

**Course Descriptions:**

**0101 Introduction to Agriculture, Food, and Natural Resources**

This is a core course for the Agriculture, Food and Natural Resources Career Cluster that builds a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of agriculture, food and natural resources careers and Cluster Foundation Knowledge and Skills. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0139 Fundamentals of Animal Processing**

This course introduces students to the principles and applications of animal processing. Students will learn carcass grading, primal and retail cuts, workplace safety, how to process primal and retail cuts, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0134 Agricultural Experience Program**

The Supervised Agricultural Experience program is a hands-on, student planned way for them to apply skills learned in the classroom to real world agricultural experiences. With help from their agricultural teachers, students develop an SAE project based on one or more SAE categories: Entrepreneurship, Placement, Research and Experimentation and Exploratory.

***Animal Processing Specialization: Choose One***

**0151 Animal processing—Retail**

This course is designed to give students the skills and knowledge needed to enter a career in the retail industry of animal processing. This course will build upon the concepts learned in Fundamentals of Animal Processing and emphasize retail cut processing, creating value added products, working with the public, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0151 Animal processing—Retail**

This course is designed to give students the skills and knowledge needed to enter a career in the retail industry of animal processing. This course will build upon the concepts learned in Fundamentals of Animal Processing and emphasize retail cut processing, creating value added products, working with the public, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**Plant Systems Pathway**

**Pathway Description:**

The Plant Systems pathway focuses on entrepreneurial and technical skills and careers in the areas of plant science, greenhouse management and production, fruit and vegetable production, floriculture and turf and landscape systems.

**Concentration: AG0210 Plant Systems - CHS**

**Courses**: 0101 Introduction to Agriculture, Food and Natural Resources

0212 Horticulture

0134 Agricultural Experience Program

Plant Systems Specialization

**Concentration Description:**

The Plant Systems concentration focuses on entrepreneurial and technical skills and careers in the areas of plant science, greenhouse management and production, fruit and vegetable production, floriculture and turf and landscape systems. The concentration offers four unique specializations. Specializations are offered in Fruit and Vegetable Production, Greenhouse Production and Management, Floriculture and Turf and Landscape Systems.

**Course Descriptions:**

**0101 Introduction to Agriculture, Food and Natural Resources**

This is a core course for the Agriculture, Food and Natural Resources Career Cluster that builds a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of agriculture, food, and natural resources careers. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0212 Horticulture**

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, career opportunities, leadership development and entrepreneurial skills. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0134 Agricultural Experience Program**

The Supervised Agricultural Experience program is a hands-on, student planned way for them to apply skills learned in the classroom to real world agricultural experiences. With help from their agricultural teachers, students develop an SAE project based on one or more SAE categories: **Entrepreneurship, Placement, Research and Experimentation** and **Exploratory.**

***Plant Systems Specialization: Choose One***

**0220 Fruit and Vegetable Production**

This specialization course covers topics on plant nutrition, site preparation, plant selection, harvesting, equipment, value-added agriculture, insect and disease identification and control, food safety, soil management, entrepreneurship and animal control. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0214 Greenhouse Production and Management**

This specialization course covers instruction that expands the 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, career planning, leadership development and entrepreneurial skills. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0213 Floriculture**

This specialization course covers topics on floral design, business planning, market plan development, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**Power, Structural and Technical Systems Pathway**

**Pathway Description:**

The Power, Structural and Technical Systems pathway focuses on entrepreneurial and technical skills and careers in the agricultural mechanics industry.

**Concentration: AG0110 Power, Structural and Technical Systems - CHS**

**Courses**: 0101 Introduction to Agriculture, Food, and Natural Resources

0112 Fundamentals of Agriculture Mechanics

0134 Agricultural Experience Program

Power, Structural & Technical Specialization

**Concentration Description:**

The Power, Structural and Technical Systems concentration focuses on entrepreneurial and technical skills and careers in the agricultural mechanics industry. Specializations for this concentration allow students to pursue their interests in either agricultural structures or agriculture repair and maintenance.

**Course Descriptions:**

**0101 Introduction to Agriculture, Food, and Natural Resources**

This is a core course for the Agriculture, Food and Natural Resources Career Cluster that builds a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of agriculture, food and natural resources careers. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0112 Fundamentals of Agriculture Mechanics**

This course introduces the knowledge and skills for applying the physical science principles and principles of operation and maintenance to mechanical equipment, welding and fabrication, structures, plumbing, electrical wiring, power utilization, and entrepreneurship. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**0134 Agricultural Experience Program**

The Supervised Agricultural Experience program is a hands-on, student planned way for them to apply skills learned in the classroom to real world agricultural experiences. With help from their agricultural teachers, students develop an SAE project based on one or more SAE categories: Entrepreneurship, Placement, Research and Experimentation and Exploratory.

***Power, Structural & Technical Specialization: Choose One***

**0113 Agriculture Structures**

Students will use computer skills to develop simple sketches and plans, read and relate structural plans to specifications and building codes, estimate project costs, use construction/fabrication equipment and tools, and plan and design machinery, equipment, buildings and facilities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, FFA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**POSSIBLE ELECTIVES**

**0133 Agricultural Cooperative Education**

Students enrolled in agricultural education courses have the unique opportunity for experiential and contextual learning on a grand scale. Students may select and participate in appropriate agricultural enterprises which provide opportunity to acquire skills, earn money and develop responsibility while also earning high school credit. This course is designed for seniors in agricultural education classes who are in their third or fourth year with satisfactory grades. Students will be placed in an agricultural occupation and will receive wages, credits toward graduation and school-release time of a maximum of three hours per day. Students who wish to enroll will need approval from program coordinator. An attendance contract will be required. The contract will be signed by the student, parent/guardian, administrator and program coordinator. Safety instruction is integrated into all activities. This course will give students experience in a potential agricultural career. Students are encouraged to become active members of FFA, the national youth organization for those enrolled in agricultural education. FFA is an integral component of the program and provides curricular opportunities that enhance student achievement. Teachers should utilize relevant FFA activities to support experiential learning.

**0146 Leadership Development**

This course is designed to provide students with basic leadership skills. Instructional areas include leadership styles, goal setting, time management, public speaking, job skills and interpersonal relationships. Safety instruction is integrated into relevant activities. Teachers should provide each student with real world learning opportunities and instruction related to selection, development, and maintenance of individual Supervised Agricultural Experience (SAE) programs. Students are encouraged to become active members of FFA, the national youth organization for those enrolled in agricultural education. FFA is an integral component of the program and provides curricular opportunities that enhance student achievement. Teachers should utilize relevant FFA activities to support experiential learning.

**BUSINESS MANAGEMENT AND ADMINISTRATION CLUSTER**

**Cluster Description:**

The Business Management and Administration Cluster prepares students for careers in planning, organizing, directing and evaluating business functions essential to efficient and productive business operations.

**Administrative Support Pathway**

**Pathway Description:**

The Administrative Support Pathway facilitates business operations through a variety of administrative and clerical duties including information and communication management, data processing collection and project tracking.

**Concentration: BM1465 Administrative Support - CHS**

**Courses:** 1401 Accounting Principles I

1411 Business Computer Applications I

1439 Business and Marketing Essentials

**Select One Course:**

**Office Support (A)**

1449 Office Management

**Information Support (B)**

1413 Business Computer Applications II

**Concentration Description:**

The Administrative Support concentration focuses on careers that facilitate business operations through a variety of administrative and clerical duties including information and communication management, data processing and collection and project tracking.

**Course Descriptions:**

**1401 Accounting Principles I**

This course is designed to develop student understanding and skills in such areas as the basic principles, concepts and practices of the accounting cycle. Journalizing, posting and analyzing of financial statements as well as banking and payroll procedures are included. The importance of ethics and confidentiality, as well as, an introduction to careers and types of business ownership are incorporated. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1411 Business Computer Applications I**

This course is designed to develop student understanding and skills in such areas as applying integrated software to business applications, word processing, spreadsheets, presentations, database applications, Internet and/or personal information programs. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1439 Business and Marketing Essentials**

This course is designed to develop student understanding and skills in such areas as business law, communication skills, customer relations, economics, emotional intelligence, financial analysis, human resources management, information management, marketing, operations, professional development and strategic management. Students acquire knowledge of fundamental business activities and factors affecting business, develop verbal and written communication skills, use information literacy skills, utilize job-seeking strategies and participate in career planning. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Select One Course to Complete Concentration:**

**Office Support (A)**

**1449 Office Management**

This course is designed to develop student understanding and skills in such areas as personal development and employability skills, managing records, processing mail, communication duties, keeping financial records, applying computing, accounting, and data skills, processing business correspondence, operating office equipment, using management skills and completing office support activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Information Support (B)**

**1413 Business Computer Applications II**

This course is designed to develop additional student understanding and skills in such areas as the use of software packages in the areas of word processing, spreadsheet, database, Internet and multimedia software. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Business Finance and Accounting Pathway**

**Pathway Description:**

The Business Finance and Accounting Pathway focuses on careers in a company that manages policies and strategies for (and implementation of) capital structure, budgeting, acquisition and investment, financial modeling and planning, funding, dividends and taxation.

**Concentration**: **BM1410 Accounting - CHS**

**Courses**: 1401 Accounting Principles I

1411 Business Computer Applications I

1439 Business and Marketing Essentials

**Select One Course**:

**Accounting (A)**

1403 Accounting Principles II

**Personal Finance (B)**

1451 Personal Finance

**Concentration Description:**

The Accounting concentration focuses on careers that record, classify, summarize, analyze and communicate a business’s financial information/business transactions for use in management decision making. Accounting includes such activities as bookkeeping, systems design, analysis and interpretation of accounting information.

**Course Descriptions:**

**1401 Accounting Principles I**

This course is designed to develop student understanding and skills in such areas as the basic principles, concepts, and practices of the accounting cycle. Journalizing, posting and analyzing of financial statements as well as banking and payroll procedures are included. The importance of ethics and confidentiality, as well as, an introduction to careers and types of business ownership are incorporated. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1411 Business Computer Applications I**

This course is designed to develop student understanding and skills in such areas as applying integrated software to business applications, word processing, spreadsheets, presentations, database applications, Internet and/or personal information programs. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1439 Business and Marketing Essentials**

This course is designed to develop student understanding and skills in such areas as business law, communication skills, customer relations, economics, emotional intelligence, financial analysis, human resources management, information management, marketing, operations, professional development and strategic management. Students acquire knowledge of fundamental business activities and factors affecting business, develop verbal and written communication skills, use information literacy skills, utilize job-seeking strategies and participate in career planning. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Select One Course to Complete Concentration**:

**Accounting (A)**

**1403 Accounting Principles II**

This course is designed to develop student understanding and skills in such areas as advanced accounting procedures and techniques utilizing both manual and computer-based accounting. There is a strong emphasis on problem solving, analysis and financial decision-making. Students study the advanced principles, concepts and practices of the accounting cycle and partnerships, corporations, cost accounting, inventory and tax accounting*.* Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Personal Finance (B)**

**1451 Personal Finance**

This course is designed to develop student understanding and skills in such areas such as money management, budgeting, financial goal attainment, credit, insurance, investments and consumer rights and responsibilities. The course culminates in a personal financial literacy workshop requiring students to share their knowledge with others. This course features a variety of activities, assessments (including multiple-choice test items) and resource lists for instructional use. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, DECA or FBLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**HOSPITALITY AND TOURISM CLUSTER**

**Cluster Description:**

The Hospitality & Tourism Cluster prepares students for careers in the management, marketing and operations of restaurants and other food services, lodging, attractions, recreational events and travel-related services.

**Restaurants and Food/Beverage Services Pathway**

**Pathway Description:**

The restaurants and food and beverage services pathway includes workers who perform a variety of tasks to maintain operations and promote guest services in eating and drinking establishments. These operations may be in the business or nonprofit sectors.

**Concentration: HO1010 ProStart Restaurant Management - JMHS**

**Courses**: 1013 Restaurant and Culinary Foundations

1014 Restaurant Management Essentials

1019 Advanced Principles in Food Production

1020 The Restaurant Professional

**Concentration Description:**

The ProStart Restaurant Management concentration focuses on the skills needed for a successful employment in a restaurant environment, but has applicability for students interested in culinary nutrition, dietary services, and child nutrition services. ProStart curriculum integrates performance-based learning with academics, entrepreneurship, and technology skills to prepare students for successful employment in the 21st Century. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, Skills USA or FCCLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**Course Descriptions:**

**1013 Restaurant and Culinary Foundations**

This course focuses on the basic preparation and service of safe food, basic introduction to industry safety standards, basic introduction to restaurant equipment, kitchen essentials in knife skills, stocks and sauces, and communication concepts in the restaurant industry. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, Skills USA or FCCLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1014 Restaurant Management Essentials**

This course is designed to focus management essentials in the restaurant industry, guest service, food production, and career exploration and pursuit. Students are encouraged to become active members of the student organization, Skills USA or FCCLA, a national student organization. Skills USA or FCCLA is an integral component of the program and provides curricular opportunities that enhance student achievement. Teachers should utilize relevant Skills or FCCLA activities to support experiential learning. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1019 Advanced Principles in Food Production**

This course is designed to examine advanced food production, nutrition, and cost control. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, Skills USA or FCCLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**1020 The Restaurant Professional**

This course is designed to provide content related global cuisine, sustainability, desserts and baked goods, and marketing. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, Skills USA or FCCLA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and skill sets.

**HEALTH SCIENCES CLUSTER**

**Cluster Description:**

Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

**Therapeutic Services Pathway**

**Concentration: HE0723 Therapeutic Services - JMHS**

**Courses:** 0711 Foundations of Health Science

0715 Advanced Principles of Health Science

0789 Clinical Specialties I (CNA)

0790 Clinical Specialties II (CNA)

**Concentration Description:**

Therapeutic Services Concentration in Marshall County includes the Certified Nursing Assistant Program.

**Course Descriptions:**

**0711 Foundations of Health Science**

The Skill Sets in this course are part of the core knowledge in all Health Science concentrations. Students enrolled in this course are offered the opportunity to earn the following industry credentials: CPR/AED Healthcare Provider or Professional Rescuer, First Aid, Bloodborne Pathogens Training: Preventing Disease Transmission. \*This course is recommended as an elective for students who are not completing a secondary level Career and Technical Education concentration.

**0715 Advanced Principles of Health Science**

Instructional  content  will  focus  on  healthcare safety,  environmental safety  processes  and procedures,  ethical  and  legal  responsibilities  and  mathematical  computations.    Medical

terminology and the reinforcement, expansion and enhancement of biology content specific to diseases and disorders are an integral part of the course.  Instruction will incorporate project

and problem based healthcare practices and procedures to demonstrate the  importance of these skills.  Students will develop basic technical skills required for all health career specialties

including patient privacy, communication, teamwork and occupational safety and be provided with  opportunities  to  obtain  certifications  in  HIPPA/Data  Privacy  and  health  care  safety.

Students utilize problem‐solving techniques and participate in hands‐on activities to develop an understanding  of  course  concepts.  Teachers should  provide  each student  with  real  world

 learning opportunities and instruction. Students are encouraged to become active members of the student organization, HOSA.  The West Virginia Standards for Global 21 Learning include the

 following  components:  Global  21  Content,  Literacy  and  Numeracy,  Entrepreneurship  and Technology Standards. All West Virginia teachers are responsible for classroom instruction that

integrates learning skills, technology tools and content skill sets.

**0789 Clinical Specialties I (CNA)**

Upon  successful  completion  of  the  prerequisite  courses  in  the  Health  Science  Education concentration, students will be provided the opportunity in Clinical Specialty I to participate in a

work‐based clincal experience. Students choose a health career specialty for in‐depth study and must  complete a minimum of 25‐55 hours  in an applicable  clinical rotation.   Instruction  is

guided by career‐specific Content skill sets that must be  mastered before students are eligible to attain established credentials and/or industry validation. Within this course, students focus upon employability  skills  and  career  development,  and  apply  healthcare  information technology  and  technical  skills.  Instruction  will  incorporate  project  and  problem‐based healthcare  practice and  procedures  to  demonstrate  the  criticality  of  these skills.  Due  to healthcare industry standards, exemplary attendance is mandatory. Students utilize problem‐solving techniques and participate

in hands‐on activities to develop an understanding of course concepts.  Teachers should provide each student with real world  learning opportunities  and instruction. Students are encouraged to become

active members of the student organization, HOSA.  The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content,  Literacy and Numeracy, Entrepreneurship

and Technology  Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and Content skill sets.

**0790 Clinical Specialties II (CNA)**

Upon  successful  completion  of  the  prerequisite  courses  in  the  Health  Science  Education concentration, students will be provided the opportunity in Clinical Specialty II to participate in

a work‐based clincal experience. Students choose a health career specialty for in‐depth study and must complete a minimum of 25‐55 hours in an applicable clinical rotation.   Instruction is

guided by career‐specific Content skill sets that must be  mastered before students are eligible to attain established credentials and/or industry validation. Within this course, students focus

upon  employability  skills  and  career  development,  and  apply  healthcare  information technology  and  technical  skills.  Instruction  will  incorporate  project  and  problem‐based

healthcare  practices  and  procedures  to  demonstrate  the  criticality  of  these skills.  Due to healthcare industry standards, exemplary attendance is mandatory.

Students utilize problem‐solving techniques and participate in hands‐on activities to develop an understanding  of  course  concepts.  Teachers should  provide  each student  with  real  world

learning opportunities and instruction. Students are encouraged to become active members of the student organization, HOSA.  The West Virginia Standards for Global 21 Learning include the

following  components:  Global  21  Content,  Literacy  and  Numeracy,  Entrepreneurship  and Technology Standards. All West Virginia teachers are responsible for classroom instruction that

integrates learning skills, technology tools and Content skill sets.

**MANUFACTURING CLUSTER**

**Cluster Description:**

The Manufacturing Cluster focuses on careers planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

**Production Pathway**

**Pathway Description:**

People with careers in production work on the shop floor making parts or assembling them. They work with machines, making or assembling electronic parts, constructing or assembling modular housing, performing welding jobs, or printing various materials.

**Concentration: MA1900 Machine Tool Technology - JMHS**

**Courses:** 1903 Fundamentals of Machine Tool Technology

1905 Fundamentals of Machine Processes

1907 Machine Tool Operations

1909 Metal Trades Processes and Applications

**Concentration Description:**

The Machine Tool Technology concentration focuses on careers that will build a knowledge base and technical skills in all aspects of the Machine Tool Technology industry. Students will have the opportunity to earn NIMS certifications that are applicable to the trade.

**Course Descriptions:**

**1903 Fundamentals of Machine Tool Technology**

This course introduces the student to the knowledge base and technical skills of the Machine Tool Technology industry. In the Fundamentals of Machine Tool Technology class areas of study include hydraulic principles, practical application of hydraulic systems, pneumatic principles, and practical application of pneumatic systems. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1905 Fundamentals of Machine Processes**

Fundamentals of Machine Processes will continue to build student skills in areas such as intermediate hand tools, power tools, measuring tools, vertical band saw, surface grinding, metal lathe operations, and milling machine operations. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1907 Machine Tool Operations**

This course introduces the student to the knowledge base and technical skills for concepts in Machine Tool Operations. Areas of study include grinding techniques, lathe operations, milling operations, and CNC machining. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1909 Metal Trades Processes and Applications**

Metal Trades Processes and Applications will continue to build student skills in areas of power saw operations, metal lathe operations, milling machine operations, and CNC machining operations. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**Concentration: MA1980 Welding - JMHS**

**Courses:** 1862 Welding I

1863 Welding II

1864 Welding III

1865 Welding IV

**Concentration Description:**

The Welding concentration focuses on careers that will build a knowledge base and technical skills in all aspects of the Welding industry. Students will have the opportunity to earn both NCCER certification and the WV Welding Certification for each skill set mastered and be exposed to skills to develop positive work ethics.

**Course Descriptions:**

**1862 Welding I**

This course is designed to introduce the student to the knowledge base and technical skills of the Welding industry. Welding I begins with the NCCER Core curriculum which is a prerequisite to all Level I completions. The students will complete modules in Basic Safety; Introduction to Construction Math; Introduction to Hand Tools; Introduction to Power Tools; Introduction to Construction Drawings; Basic Rigging; Basic Communication Skills; Basic Employability Skills; and Introduction to Materials Handling. Students will then begin developing skill sets in the fundamentals of Welding such as Welding Safety; Oxyfuel Cutting; and Plasma Arc Cutting. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1863 Welding II**

Welding II will continue to build student skill sets in areas of Air Carbon Arc Cutting and Gouging; Base Metal Preparation; Weld Quality; SMAW-Equipment and Setup; Shielded Metal Arc Electrodes; SMAW-Beads and Fillet Welds; Joint Fit Up and Alignment; SMAW-Groove Welds with Backing; and SMAW-Open V-Groove Welds. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1864 Welding III**

Welding III will continue to build student skill sets in areas of Welding Symbols; Reading Welding Detail Drawings; Physical Characteristics and Mechanical Properties of Metals; Preheating and Postheating of Metals; GMAW and FCAW-Equipment and Filler Metals; and GMAW and FCAW-Plate. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1865 Welding IV**

Welding IV will continue to build student skill sets in areas of GTAW-Equipment and Filler Metals; and GTAW-Plate. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS CLUSTER**

**Cluster Description:**

The Science, Technology, Engineering and Mathematics Cluster focuses on careers in planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

**Engineering and Technology Pathway**

**Pathway Description:**

For a future in the Engineering and Technology pathway, students should study and apply principles from advanced mathematics life sciences physical science, earth and space science, and technology. In addition, future engineers and technologists should learn certain processes in mathematics, science and technology. In Grades 9-12, all future engineers and technologists should study mathematics each year, learning important mathematical concepts and processes defined by the National Council of Teachers of Mathematics in Principles and Standards for School Mathematics. With such knowledge and skills, students will be able to demonstrate the following competencies: 1.) Apply mathematics, science and technology concepts to solve problems quantitatively in engineering projects involving design, development or production in various technologies; and 2.) Recognize the core concepts of technology and their relationships with engineering, science and math, and other subjects. All future engineers and technologists should learn important science concepts and processes with an understanding of physics, chemistry and biology as a minimal set. These concepts and processes are defined by the National Research Council in the National Science Education Standards and by the American Association for the Advancement of Science in Benchmarks for Science Literacy. Additionally, learners should become proficient in the areas of technology defined by the Standards for Technological Literacy.

**Concentration: ST2460 Pre-Engineering (Project Lead The Way) - CHS**

**Courses:** 2461 Introduction to Engineering Design (IED)

2463 Principles of Engineering (POE)

2464 Engineering Design and Development (EDD)

2465 Computer Integrated Manufacturing (CIM)

**Concentration Description:**

The Pre-Engineering concentration focuses a broad range of engineering careers and foundation knowledge including basic safety, plan reading, use of tools and equipment as well as how to employ positive work ethics in an engineering career.

**Course Descriptions:**

**2461 Introduction to Engineering Design**

Introduction to Engineering Design is a component of the Project Lead the Way (PLTW) pre-engineering curriculum. This course teaches problem-solving skills using a design development process. Models of product solutions are created, analyzed, and communicated using solid modeling computer design software. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**2463 Principles of Engineering**

Principles of Engineering is a component of the Project Lead the Way (PLTW) pre-engineering curriculum. This course will help students understand the field of engineering and engineering technology. Exploring various technology systems and manufacturing processes help students learn how engineers and technicians use math, science, and technology in an engineering problem solving process to benefit people. The course also includes concerns about social and political consequences of technological change. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA or WV TSA (Technology Student Association). The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**2464 Engineering Design and Development**

Engineering Design and Development is a component of the Project Lead the Way (PLTW) pre-engineering curriculum. This is an engineering research course in which students work in teams to research, design, and construct a solution to an open-ended engineering problem. Students apply principles developed in the four preceding courses and are guided by a community mentor. They must present progress reports, submit a final written report, and defend their solutions to a panel of outside reviewers at the end of the school year. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA or WV TSA (Technology Student Association). The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**2465 Computer Integrated Manufacturing Project Lead the Way**

Computer Integrated Manufacturing is a component of the Project Lead the Way (PLTW) pre-engineering curriculum. This course will introduce students to principles of robotics and automation and CAD design. The course builds on computer solid modeling skills developed in Computer Integrated Manufacturing, and Design and Drawing for Production. Students use CNC equipment to produce actual models of their three-dimensional designs. Fundamental concepts of robotics used in automated manufacturing and design analysis are included. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA or WV TSA (Technology Student Association). The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**TRANSPORTATION,DISTRIBUTION AND LOGISTICS CLUSTER**

**Cluster Description:**

The Transportation, Distribution and Logistics Cluster focuses on careers in the planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

**Facility and Mobile Equipment Maintenance Pathway**

**Pathway Description:**

Careers in the Facility and Mobile Equipment Maintenance pathway include the maintenance, repair, and servicing of vehicles and transportation facilities, as well as the refueling of mobile equipment. All transportation relies on equipment which must function as designed, whenever needed. The people in this pathway keep the equipment and machinery running while looking for more efficient, safe, and cost-effective ways to do so.

**\*\*Concentration: TR1620 Automotive Technology - CHS**

**Courses:** 1631 Fundamentals of Automotive Technology

1623 Basic Engine Concepts

1625 Brakes

1637 Suspension and Steering

**Concentration Description:**

The Automotive Technology concentration focuses on careers that will build a knowledge base and technical skills in all aspects of the automotive industry. Students will have the opportunity to acquire hours towards certification and be exposed to skills to develop positive work ethics.

**Course Descriptions:**

**1631 Fundamentals of Automotive Technology**

This course introduces the student to the knowledge base and technical skills as they relate to the field of Automotive Technology. In the Fundamentals of Automotive Technology class areas of study include career opportunities and practices, basic safety, tool and equipment, measuring tools and equipment, automotive specifications, electrical system basics, battery service, wheel and tire service, cooling and lubrication systems, and student organizations. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1623 Basic Engine Concepts**

Basic Engine Concepts will continue to build student skill sets in areas such as general engines, diagnosis of cylinder head and valve train, diagnosis and repair of engine block, and diagnosis and repair of lubrication and cooling systems. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1625 Brake Systems**

Brake Systems will continue to build student skill sets in areas such as diagnosis and repair of hydraulic systems, diagnosis and repair of drum brakes, diagnosis and repair of disc brakes, power assist systems, and antilock brake systems. Students will comply with personal and environmental safety practices associated with proper ventilation, handling, storage, and disposal of brake components. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1637 Suspension and Steering Diagnosis**

Suspension and Steering Diagnosis will continue to build student skill sets in areas such as diagnosis and repair of steering systems, diagnosis and repair of front suspension systems, diagnosis and repair of rear suspension systems, miscellaneous suspension and steering systems, and diagnosis and adjust wheel alignment. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**\*\*Concentration: TR1670 Collision Repair Technology - CHS**

**Courses:** 1671 Fundamentals of Collision Repair

1675 Non-Structural Analysis and Damage Repair

1677 Structural Analysis and Damage Repair

1679 Surface Preparation and Refinishing

**Concentration Description:**

The Collision Repair Technology concentration focuses on careers that will build a knowledge base and technical skills in all aspects of the Collision Repair industry. Students will have the opportunity to acquire hours towards NATEF certification and be exposed to skills to develop positive work ethics.

**Course Descriptions:**

**1671 Fundamentals of Collision Repair**

This course introduces the student to the knowledge base and technical skills as they relate to the field of Collision Repair Technology. In the Fundamentals of Collision Repair Technology class areas of study include career opportunities and practices, integrated academics, knowledge of tools and equipment, panel straightening techniques, and introduction to vehicle preparation. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1675 Non-Structural Analysis and Damage Repair**

Non-Structural Analysis and Damage Repair will continue to build student skill sets in non-structural analysis and repair of metal and composite parts. Students will utilize integrated academics, problem-solving techniques, and manipulative skills while completing lab activities to develop an understanding of course concepts. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1677 Structural Analysis and Damage Repair**

Structural Analysis and Damage Repair will continue to build student skill sets in frame and unibody type vehicles using welding techniques, measuring equipment, and frame machines. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

**1679 Surface Preparation and Refinishing**

Surface Preparation and Refinishing will continue to build student skill sets in preparing a surface for refinishing; inspect, clean and operate spraying equipment; detail a vehicle; and diagnose finish defects. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.