# Snyder High School
# Course Descriptions for
# Career and Technology Courses
## Adopted 2017

Be Heard ROAR
Reaching Occupational Awareness & Readiness

# 2017 New Course Descriptions

**Career Preparation I (2 credits)** - provides opportunities for students to participate in a work-based learning experience that combines classroom instruction with business and industry employment experiences. The goal is to prepare students with a variety of skills for a changing workplace. Career preparation is relevant and rigorous, supports students attainment of academic standards, and effectively prepares students for college and career success

**Career Preparation II (2 credits)** - develops essential knowledge and skills through advanced classroom instruction with business and industry employment experiences. Career Preparation II maintains relevance and rigor, supports student attainment of academic standards, and effectively prepares students for college and career success.

**Extended Career Preparation (1 credit Prerequisite: Successful completion of one or more advanced career and technical education courses that are part of a coherent sequence of courses in a career cluster related to the field in which the students will be employed. Corequisite: Career Preparation I or Career Preparation II. May not be taken as a stand-alone course.)** - opportunities for students to participate in a work-based learning experience that combines classroom instruction with business and industry employment experiences. The goal is a prepare students with a variety of skills for a changing workplace. Career preparation is relevant and rigorous, supports student attainment of academic standards, and effectively prepares students for college and career success.

## AGRICULTURE, FOOD AND NATURAL RESOURCES

**Principles of Agriculture, Food, and Natural Resources (1 credit)** - will allow students to develop knowledge and skills regarding career and educational opportunities, personal development, globalization, industry standards, details, practices and expectations. To prepare for careers in agriculture, food, and natural resources, students must attain academic skills and knowledge in agriculture. To prepare for success, students need opportunities to learn, reinforce, experience, apply, and transfer their knowledge and skills in a variety of settings.

**Livestock Production (1 credit)** - students will acquire knowledge and skills related to livestock and the livestock production industry. Livestock Production may address topics related to beef cattle, dairy cattle, swine, sheep, goats, and poultry. To prepare for careers in the field of animal science, students must attain academic skills and knowledge, acquire knowledge and skills related to animal systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply and transfer their knowledge and skills in a variety of settings.

**Small Animal Management (0.5 credit)** - students will acquire knowledge and skills related to small animals and the small animal management industry. Small Animal Management may address topics related to small mammals such as dogs and cats, amphibians, reptiles, and birds. To prepare for careers in the field of animal science, students must enhance academic knowledge and skills, acquire knowledge and skills related to animal systems, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer knowledge and skills in a variety of settings.

**Equine Science (0.5 credit)** - students will acquire knowledge and skills related to equine animal systems and the equine industry. Equine Science may address topics related to horses, donkeys, and mules. To prepare for careers in the field of animal science, students must enhance academic knowledge and skills, acquire knowledge and skills related to animal systems, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students needs opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

**Veterinary Medical Applications (1 credit; Prerequisite: Equine Science, Small Animal Management, or Livestock Production)** - covers topics relating to veterinary practices, including practices for large and small animal species. To prepare for careers in the field of animal science, students must attain academic skills and knowledge, acquire technical knowledge and skills related to animal systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply and transfer knowledge and skills and technologies in a variety of settings.

**Advanced Animal Science (1 credit; Prerequisites: Biology and Chemistry; Algebra I and Geometry; and either Small Animal Management, Equine Science or Livestock Production. Recommended prerequisite: Veterinary Medical Applications) Science Credit** - examines the interrelatedness of human, scientific, and technological dimensions of livestock production. Instruction is designed to allow for the application of scientific and technological aspects of animal science through field and laboratory experiences. To prepare for careers in the field of animal science, students must attain academic skills and knowledge, acquire knowledge and skills related to animal systems, and develop knowledge and skills regarding career opportunities, entry requirements, and industry standards. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

**Mathematical Applications in Agriculture, Food, and Natural Resources (1 credit; Prerequisite: Algebra I Recommended prerequisite: one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster) 3rd Math Credit** - students will apply knowledge and skills related to mathematics, including algebra, geometry, and data analysis in the context of agriculture, food, and natural resources. To prepare for careers in agriculture, food, and natural recourses, students must acquire technical knowledge in the discipline as well as apply academic skills in mathematics.

**Energy and Natural Resource Technology ( 1 credit; Recommended Prerequisite: a minimum of one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster)** - examines the interrelatedness of environmental issues and production agriculture. Students will evaluate the environmental benefits provided by sustainable resources and green technologies. Instruction is designed to allow for the application of science and technology to measure environmental impacts resulting from production agriculture through field and laboratory experiences. To prepare for careers in environmental service systems, students must attain academic skills and knowledge, acquire advanced technical knowledge and skills related to environmental service systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Advanced Energy and Natural Resource Technology (1 credit; Recommended Prerequisites: a minimum of one credit from the courses in the Agriculture, Food, and Natural Resource Technology)** - designed to explore the interdependency of the public and natural resource systems related to energy production. In addition, renewable, sustainable, and environmentally friendly practices will be explored. To prepare for careers in the field of energy and natural resource systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to energy and natural resources and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Wildlife, Fisheries and Ecology Management (1 credit)** - examines the management of of game and nongame wildlife species, fish, and aquacrops and their ecological needs as related to current agricultural practices. To prepare for careers in natural resource systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to natural resources, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Range Ecology and Management (1 credit)** - designed to develop students' understanding of rangeland ecosystems and sustainable forage production. To prepare for careers in environmental and natural resource systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to environmental and natural resources, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Floral Design (1 credit; can count as a Fine Art)** - designed to develop students' ability to identify and demonstrate the principles and techniques related to floral design as well as develop an understanding of the management of floral enterprises. Through the analysis of artistic floral styles and historical periods, students will develop respect for the traditions and contributions of diverse cultures. Students will respond to and analyze floral designs, thus contributing to the development of lifelong skills of making informed judgments and evaluations.

**Landscape Design and Management (0.5 credit)** - designed to develop an understanding of landscape design and management techniques and practices.

**Turf Grass Management (0.5 credit)** - designed to develop an understanding of turf grass management techniques and practices. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Horticultural Science (1 credit)** - designed to develop an understanding of common horticultural management practices as they relate to food and ornamental plant production. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticulture and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

**Advanced Plant and Soil Science (1 credit; Recommended Prerequisites: Biology, IPC, Chemistry or Physics and a minimum or one credit from the courses in the Agriculture, Food and Natural Resources Career Cluster)** - provides a way of learning about the natural world. Students should know how plant and soil science has influenced a vast body of knowledge, that there are still applications to be discovered, and that plant and soil science is the basis for many other fields of science. To prepare for careers in plant and soil science, students must attain academic skills and knowledge, acquire technical knowledge and skills related to plant and soil science and the workplace, and develop knowledge and skills regarding career opportunities , entry requirements, and industry expectations.

**Agricultural Mechanics and Metal Technologies with Lab (2 credits; Recommended Prerequisite: Principles of Agriculture, Food, and Natural Resources)** - designed to develop an understanding of agricultural mechanics as it relates to safety and skills in tool operation, electrical wiring, plumbing, carpentry, fencing, concrete, and metal working techniques. To prepare for careers in agricultural power, structural, and technical systems.

**Agricultural Structures Design and Fabrication with Lab (2 credits; Recommended Prerequisite: Agricultural Mechanics and Metal Technologies)** - students will explore career opportunities, entry requirements, and industry expectations. To prepare for careers in mechanized agriculture and technical systems.

**Agricultural Equipment Design and Fabrication with Lab (2 credits; Recommended Prerequisite: Agricultural Mechanics and Metal Technologies)** - Students will acquire knowledge and skills related to the design and fabrication of agricultural equipment. To prepare for careers in mechanized agriculture and technical systems.

**Agricultural Power Systems (2 credits; Prerequisite: Principles of Agriculture, Food, and Natural Resources)** - designed to develop an understanding of power and control systems as related to energy sources, small and large power systems, and agricultural machinery. To prepare for careers in agricultural power, structural, and technical systems.

## ARCHITECTURE AND CONSTRUCTION

**Principles of Construction (1 credit)** - provide an introduction and lay a solid foundation for those students entering the construction or craft skilled areas. The course provides a strong knowledge of construction safety, construction mathematics, and common hand and power tools. For safety and liability considerations, limiting course enrollment to 15 students is recommended. This course also provides communication and occupation skills to assist the student in obtaining and maintaining employment.

**Construction Management I (2 credits; Prerequisite: Algebra I, Geometry, and Principles of Construction)** - students will gain knowledge and skills needed to enter the workforce as apprentice carpenters or building maintenance supervisors' assistants or to build a foundation toward a postsecondary degree in architecture, construction science, drafting, or engineering. Construction Management I includes the knowledge of design techniques and tools related to the management of architectural and engineering projects.

**Constructions Management II (2 credits; Prerequisite: Construction Management I)** - students will gain knowledge and skills needed to enter the workforce as apprentice carpenters or building maintenance supervisors; assistants or to build a foundation toward a postsecondary degree in architecture, construction science, drafting, or engineering. Construction Management II includes knowledge of the design, techniques, and tools related to the management of architectural and engineering projects.

**Construction Technology I (2 credits; Prerequisite: Principles of Construction)** - students will gain knowledge and skills needed to enter the workforce as carpenters or building maintenance supervisors or to prepare for a postsecondary degree in construction management, architecture, or engineering. Students will acquire knowledge and skills in safety, tool usage, building materials, codes, and framing. For safety and liability considerations, limiting course enrollment to 15 students is recommended. In Construction Technology I, students will gain knowledge and skills needed to enter the workforce as carpenters or building maintenance supervisors or to prepare for a postsecondary degree in construction management, architecture, or engineering.

**Construction Technology II (2 credits; Prerequisite: Construction Technology I)** - students will gain advanced knowledge and skills needed to enter the workforce as carpenters, building maintenance technicians, or supervisors or to prepare for a postsecondary degree in construction management, architecture, or engineering. Students will build on the knowledge base from Construction Technology I and are introduced to exterior and interior finish out skills.

## BUSINESS MANAGEMENT AND ADMINISTRATION

**Principles of Business, Marketing, and Finance (1 credit)** - students gain knowledge and skills in economics and private enterprise systems, the impact of global business, the marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems,and settings in business, marketing, and finance.

**Business Information Management I (1 credit)** - students implement personal and interpersonal skills to strengthen individual performance i the workplace and in society and make a successful transition to the workforce and postsecondary education. Students apply technical skills to address business applications of emerging technologies, create word-processing documents, develop a spreadsheet, formulate a database, and make an electronic presentation using appropriate software.

**Business English (1 Credit; Prerequisites: English I, II, and III)** - students enhance communication and research skills by applying them to the business environment, in addition to exchanging information and producing properly formatted business documents using emerging technology. Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

**Accounting (1 credit; Prerequisite: Principles of Business, Marketing, and Finance)** - students will investigate the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students will reflect on this knowledge as they engage in the process of recording, classifying, summarizing, analyzing, and communicating accounting information. Students will formulate and interpret financial information for use in management decision making.

**Business Management (1 credit)** - designed to familiarize students with the concepts related to business management as well as the functions of management, including planning, organizing, staffing, leading, and controlling. Students will also demonstrate interpersonal and project-management skills.

**Financial Mathematics (1 credit; Prerequisite: Algebra I)** - a course about personal money management. Students will apply critical-thinking skills to analyze personal financial decisions based on current and projected economic factors.

## EDUCATION AND TRAINING

**Principles of Education and Training (1 credit)** - designed to introduce learners to the various careers available within the Education and Training Career Cluster. Students use self-knowledge as will as educational and career information to analyze various careers within the Education and Training Career Cluster. Students will develop a graduation plan that leads to a specific career choice in the student's interest area.

**Human Growth and Development (1 credit; Prerequisite: Principles of Education and Training)** - an examination of human development across the lifespan with emphasis on research, theoretical perspectives, and common physical, cognitive, emotional, and social developmental milestones. The course covers material that is generally taught in a postsecondary, one-semester introductory course in developmental psychology or human development.

**Instructional Practices (2 credits; Recommended Prerequisites: Principles of Education and Training and Human Growth and Development)** - is a field-based (practicum) internship that provides students with background knowledge of child and adolescent development as well as principles of effective teaching and training practices. Students work under the joint direction and supervision of both a teacher with knowledge of early childhood, middle childhood and adolescence education and exemplary educators or trainers in direct instructional roles with elementary, middle school, and high school aged students. Students learn to plan and direct individualized instruction and group activities, prepare instructional materials, develop materials for educational environments, assist with record keeping, and complete other responsibilities of teachers, trainers, paraprofessionals or other educational personnel.

## FINANCE

**Money Matters (1 credit; Recommended Prerequisite: Principles of Business, Marketing, and Finance**) - students will investigate money management from a personal financial perspective. Students will apply critical-thinking skills to analyze financial options based on current and projected economic factors. Students will gain knowledge and skills necessary to establish short term and long-term financial goals through various methods such as investing, tax planning asset allocation, risk management, retirement planning, and estate planning.

**Accounting I (1 credit; Recommended Prerequisite: Principles of Business, Marketing, and Finance)** - students will investigate the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students will reflect on this knowledge as they engage in the process of recording, classifying, summarizing, analyzing, and communicating accounting information. Students will formulate and interpret financial information for use in management decision making.

**Accounting II (1 credit; Prerequisite: Accounting I)** - students will continue the investigation of the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal and ethical factors. Students will reflect on this knowledge as they engage in various managerial, financial, and operational accounting activities. Students will use equations, graphical representations, accounting tools, spreadsheet software, and accounting systems in real-world situations to maintain, monitor, control, and plan the use of financial resources.

**Financial Mathematics (1 credit; Prerequisite: Algebra I)** - a course about personal money management. Students will apply critical-thinking skills to analyze personal financial decisions based on current and projected economic factors.

## HEALTH SCIENCE

**Principles of Health Science (1 credit)** - designed to provide an overview of the therapeutic, diagnostic, health informatics, support services, and biotechnology research and development systems of the healthcare industry.

**Medical Terminology (1 credit)** - designed to introduce students to the structure of medical terms, including prefixes, suffixes, word roots, singular and plural forms, and medical abbreviations. The course allows students to achieve comprehension of medical vocabulary appropriate to medical procedures, human anatomy and physiology, and pathophysiology.

**Health Science Theory (1 credit; Prerequisites: Principle of Health Science and Biology)** - designed to provide for the development of advanced knowledge and skills related to a wide variety of health careers. Students will employ hands-on experiences for continued knowledge and skill development.

**Anatomy and Physiology (1 credit; Prerequisite: Biology and a second science credit)** - designed for students to conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. STudents in Anatomy and Physiology will study a variety of topics, including the structure and function of the human body and the interaction of body systems for maintaining homeostasis.

**Medical Microbiology (1 credit; Prerequisites: Biology and Chemistry)** - designed to explore the microbial world, studying topics such as pathogenic and non-pathogenic microorganisms, laboratory procedures, identifying microorganisms, drug resistant organisms, and emerging diseases.

## HOSPITALITY AND TOURISM

**Principles of Hospitality and Tourism (1 credit)** - introduces students to an industry that encompasses lodging, travel and tourism, recreation, amusements, attractions, and food/beverage operations. Students learn knowledge and skills focusing on communication, time management, and customer service that meet industry standards. Students will explore the history of the hospitality and tourism industry and examine characteristics needed for success in that industry.

**Introduction to Culinary Arts (1 credit)** - will emphasize the principles of planning, organizing, staffing, directing, and controlling the management of a variety of food service operations. The course will provide insight into the operation of a well-run restaurant. Introduction to Culinary Arts will provide insight into food production skills, various levels of industry management, and hospitality skills. This is an entry level course for students interested in pursuing a career in the foodservice industry. This course is offered as a classroom and laboratory-based course.

**Culinary Arts (2 credits; Prerequisite: Introduction to Culinary Arts)** - begins with the fundamentals and principles of the art of cooking and the science of baking and includes management and production skills and techniques. Students can pursue a national sanitation certification or other appropriate industry certifications. This course is offered as a laboratory-based course.

**Advanced Culinary Arts (2 credits; Prerequisite: Culinary Arts)** - Will extend content and enhance skills introduced in Culinary Arts by in depth instruction of industry-driven standards in order to prepare students for success in higher education, certification, and/or immediate employment.

## HUMAN SERVICES

**Principles of Human Service (1 credit)** - a laboratory course that will enable students to investigate careers in the Human Services Career Cluster, including counseling and mental health, early childhood development, family and community, personal care, and consumer services. Each student is expected to complete the knowledge and skills essential for success in high-skill, high-wage, or high-demand human services careers.

**Interpersonal Studies (0.5 credit; Recommended Prerequisites: Principles of Human Services, Principles of Health Science, or Principles of Education and Training)** - examines how the relationships between individuals and among family members significantly affect the quality of life. Students use knowledge and skills in family studies and human development to enhance personal development, foster quality relationships, promote wellness of family members, manage multiple adult roles, and pursue careers related to counseling and mental health services.

**Lifetime Nutrition and Wellness (0.5 credit; Recommended Prerequisite: Principles of Human Services or Principles of Health Science)** - a laboratory course that allows students to use principles of lifetime wellness and nutrition to help them make informed choices that promote wellness as well as pursue careers related to hospitality and tourism, education and training, human services, and health sciences.

**Child Development (1 credit; Prerequisite: Principles of Human Services)** - a technical laboratory course that addresses knowledge and skills related to child growth and development from prenatal through school-age children, equipping students with child development skills. Students use these skills to promote the well-being and healthy development of children and investigate careers related to the care and education of children.

**Child Guidance (2 credits; Prerequisite: Principles of Human Services and Child Development)** - a technical laboratory course that addresses the knowledge and skills related to child growth and guidance equipping students to develop positive relationships with children and effective caregiver skills. Students use these skills to promote the well-being and healthy development of children, strengthen a culturally diverse society, and pursue careers related to the care, guidance, and education of children, including those with special needs. Instruction may be delivered through school-based laboratory training or through work-based delivery arrangements such as a cooperative education, mentoring, and job shadowing.

**Family and Community Services (1 credit; Prerequisite: Principles of Human Services)** - a laboratory-based course designed to involve students in realistic and meaningful community-based activities through direct service or service-learning experiences. Students are provided opportunities to interact with and provide services to individuals, families, and the community through community or volunteer services. Emphasis is placed on developing and enhancing organizational and leadership skills and characteristics.

## MANUFACTURING

**Principles of Manufacturing (1 credit; Recommended Prerequisite: Algebra I or Geometry)** - students are introduced to knowledge and skills used in the proper application of principles of manufacturing. The study of manufacturing technology allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities. Students will gain an understanding of what employers require to gain and maintain employment in manufacturing careers.

**Introduction to Welding (1 credit; Prerequisite: Algebra I)** - will provide an introduction to welding technology with an emphasis on basic welding laboratory principles and operating procedures. Students will be introduced to the three basic welding processes. Topics include: industrial safety and health practices, hand tool and power machine use, Measurement, laboratory operating procedures, welding power sources, welding career potentials, and introduction to welding codes and standards.I Introduction to Welding will provide student with the knowledge, skills, and technologies required for employment in welding industries. Students will develop knowledge and skills related to welding and apply them to personal career development. This course supports integration of academic and technical knowledge and skills. Students will reinforce, apply and transfer knowledge and skills to a variety of settings and problems.

**Welding I (2 credits; Prerequisites: Algebra I, Principles of Manufacturing, Introduction to Precision Metal Manufacturing or Introduction to Welding)** - provides the knowledge, skills and technologies required for employment in metal technology systems. Students will develop knowledge and skills related to this system and apply them to personal career development. This course supports integration of academic and technical knowledge and skills. Students will reinforce, apply, and transfer knowledge and skills to a variety of settings and problems.

**Welding II (2 credits; Prerequisite: Welding I, Algebra I and Geometry)** - builds on the knowledge and skills developed in Welding I. Students will develop advanced welding concepts and skills as related to personal and career development. Students will integrate academic and technical knowledge and skills.

## MARKETING

**Advertising (0.5 credit; Recommended Prerequisite: Principles of Business Marketing and Finance)** - designed as a comprehensive introduction t the principles and practices of advertising. Students will gain knowledge of techniques used in current advertising, including print, broadcast, and digital media. The course explores the social, cultural, ethical, and legal issues of advertising, historical influences, strategies, media decision processes as well as integrated marketing communications, and careers in advertising and sales promotion. The course provides an overview of how communication tools can be used to reach target audiences and increase consumer knowledge.

**Fashion Marketing (0.5 credit; Recommended Prerequisite: Principles of Business, Marketing, and Finance)** - is designed to provide students with knowledge of the various business functions in the fashion industry. Students in Fashion Marketing will gain a working knowledge of promotion, textiles, merchandising, mathematics, selling, visual merchandising, and career opportunities.

**Entrepreneurship (1 credit; Recommended Prerequisite: Principles of Business, Marketing, and Finance)** - students will gain the knowledge and skills needed to become an entrepreneur. Students will learn the principles necessary to begin and operate a business. The primary focus of the course is to help students understand the process of analyzing a business opportunity, preparing a business plan, determining feasibility of an idea using research, and developing a plan to organize and promote the business and its products and services. In addition, students will understand the capital required, the return on investment desired, and the potential for profit.

**Sports and Entertainment Marketing (0.5 credit; Recommended Prerequisite: Principles of Business, Marketing, and Finance)** - will provide students with a thorough understanding of the marketing concepts and theories that apply to sports and entertainment. The areas this course will cover include basic marketing concepts, publicity, sponsorship, endorsements, licensing, branding, event marketing, promotions, and sports and entertainment marketing strategies.

**Social Media Marketing (0.5 credit; Recommended Prerequisite: Principles of Business, Marketing and Finance or any marketing course)** - designed to look at the rise of social media and how marketers are integrating social media tools in their overall marketing strategy. The course will investigate how the marketing community measures success in the new world of social media. Students will manage a successful social media presence for an organization, understand techniques for gaining customer and consumer buy-in to achieve marketing goals, and properly select social media platforms to engage consumers and monitor and measure the results of these efforts.

**Advanced Marketing (2 credits; Prerequisite: one credit from the courses in the Marketing Career Cluster)** - students will gain knowledge and skills that help them become proficient in one or more of the marketing functional areas. Students will illustrate appropriate management and research skills to solve problems related to marketing. This course covers technology, communication, and customer-service skills.

## SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS STEM

**Principles of Applied Engineering (1 credit)** - an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will have an understanding of the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

**Principles of Technology (1 credit; Prerequisites: one credit of high school science and Algebra I)** - students will conduct laboratory and field investigations, use scientific methods during investigation, and make informed decisions using critical thinking and scientific problem solving. Various systems will be described in terms of space, time, energy, and matter. Students will study a variety of topics that include laws of motion, conservation of energy, momentum, electricity, magnetism, thermodynamics, and characteristics and behaviour of waves. Students will apply physics concepts and perform laboratory experimentations for at least 40% of instruction time using safe practices.

**Forensic Science (1 credit; Prerequisites: Biology and Chemistry)** - a course that introduces students to the application of science to connect a violation of law to a specific criminal, criminal act, or behavior and victim. Students will learn terminology and procedures related to the search and examination of physical evidence in criminal cases as they are performed in a typical crime laboratory. Using scientific methods, students will collect and analyze evidence such as fingerprints, bodily fluids, hairs, fibers, paint, glass, and cartridge cases. Students will also learn the history and the legal aspects as they relate to each discipline of forensic science.

**Scientific Research and Design (1 credit; Prerequisite: Biology, Chemistry, IPC or Physics)** - is a broad-based course designed to allow districts and schools considerable flexibility to develop local curriculum to supplement any program of study or coherent sequence. The course has the components of any rigorous scientific or engineering program of study from the problem identification, investigation design, data collection, data analysis, formulation, and presentation of the conclusions. All of these components are integrated with the career and technical education emphasis of helping students gain entry-level employment in high-skill, high -wage jobs and/or continue their education.

**Energy and Beyond: Using Drones (1 credit; Prerequisites: Algebra I and Geometry, 2 sciences from STEM cluster)** - is the creative process of solving problems by identifying needs and then devising solutions. The solution may be a product, technique, structure, or process depending on the problem. Science aims to understand the natural world while engineering seeks to shape this world to meet human needs and wants. Engineering design takes into consideration limiting factors or “design under constraint”.

**Engineering Science (1 credit; Prerequisites: Algebra I, Geometry and Biology, Chemistry, IPC or Physics)** - is an engineering course designed to expose students to some of the major concepts and technologies that they will encounter in a postsecondary program of study in any engineering domain. Students will have an opportunity to investigate engineering and high-tech careers. Students will employ science, technology, engineering and mathematical concepts in the solution of real-world challenge situations. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges.

## TRANSPORTATION, DISTRIBUTION AND LOGISTICS

**Introduction to Transportation Systems (1 credit)** - students will gain knowledge and skills in the safe application, design, production, and assessment of products, services, and systems. This knowledge includes the history, laws and regulations, and common practices used in the transportation industry. Students should apply knowledge and skills in the application, design, and production of technology as it relates to the transportation industries. This course allows students to reinforce, apply and transfer their academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings.

**Energy and Power of Transportation Systems (1 credit; Prerequisite: Principles of Transportation Systems)** - will prepare students to meet the expectations of employers in this industry and to interact and relate to others. Students will learn the technologies used to provide products and services in a timely manner. The businesses and industries of the TDL Career Cluster are rapidly expanding to provide new career and career advancement opportunities. Performance requirements will include academic and technical skills. Students will need to understand the interaction between various vehicle systems, including engines, transmissions, brakes, fuel, cooling, and electrical. Students will also need to understand the logistics used to move goods and services to consumers, as well as the components of transportation infrastructure.

**Automotive Basics (1 credit; Recommended Prerequisite: Introduction to Transportation Systems)** - knowledge of the basic automotive systems and the theory and principles of the components that make up each system and how to service these systems. Automotive Basics includes applicable safety and environmental rules and regulations. In Automotive Basics, students will gain knowledge and skills in the repair, maintenance, and servicing of vehicle systems. This study allows students to reinforce, apply and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.

**Automotive Technology I: Maintenance and Light Repair ( 2 credits; Prerequisite: Automotive Basics)** - knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. This course includes applicable safety and environmental rules and regulations. In Automotive Technology I: Maintenance and Light Repair, students will gain knowledge and skills in the repair, maintenance, and diagnosis of vehicle systems. This study will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.

**Automotive Technology II: Automotive Service (2 credits; Prerequisite: Automotive Technology I: Maintenance and Light Repair)** - includes knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. Automotive Technology II: Automotive Service includes applicable safety and environmental rules and regulations. In this course, students will gain knowledge and skills in the repair, maintenance, and diagnosis of vehicle systems. This study will allow students to reinforce, apply and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.