

Pathway		INTRO	CONC	CAPSTONE
INFORMATION & COMMUNICATION TECHNOLOGY (ICT)			Information Systems	Cyber Security
ENGINEERING/ MANUFACTURING	ENGINEERING		Robotics	Adv. Engineering Princ.
	ADVANCED MANUFACTURING	Engineering & Manufacturing	Machine/Tool Technology	Adv. Mach/Tool Technology
		Engineering & Manufacturing	CAD and/or Design/Build	Product Innov./Design
	TRANSPORTATION TECH	Trans Tech 1	Trans Tech 2	Trans Tech 3
AGRICULTURE				Vet Science
			Sustainable Agri-Biology (life science)	Chemistry and Agri-Science (physical science)
		Agri. Engineering	AG Engineering 2: Small Engine Repair	Adv. Ag. Engineering
			Floral Design	Adv. Floral Design
			Environmental Horticulture	Adv. Environmental Horticulture
CULINARY ARTS			Culinary Arts	Adv. Culinary Arts and/or Culinary Arts: Baking
DIGITAL MEDIA ARTS			Dig Media Production 1/2	Dig Media Production ¾

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Information & Communication Technology (ICT)

The ICT pathway focuses on cyber security and hacker prevention. There are three courses in this pathway, with the option for students to take an AP Computer Science course if they choose. These courses are aligned with college courses that lead to an AA or BA degree in Network Administration, Computer Science, and/or Information Systems. Students can work towards earning industry approved certificates in Microsoft, Windows, Linux, Cisco, and/or Java.

Computer Information Systems: The first course in the Cyber Security pathway. This class introduces computers and information systems. Content includes fundamental concepts of hardware and software as applied to computers in a business environment; programming, operating systems, the Internet, data communications, systems development life cycle, and information systems; use of typical software packages including word processing, spread-sheeting, database and presentation graphics. Hands-on experience with personal computers in labs. CIS is intended for those seeking a career as a computer professional, an understanding of the role of Information Systems in the business community, or introductory “end user” computer skills.

Networking & Fundamentals: The second course in the Cyber Security pathway. This course provides an introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols, and applications. Topics to be covered include: layered network architecture, physical layer and data link protocols, network and transport protocols, unicast and multicast routing protocols, and applications. Examples will be drawn from the Internet TCP/IP protocol suite. The course also includes programming projects, in which students gain hand-on experience with basic network programming and development of simple network applications.

Hacker Prevention & Security: *COMING 2018-2019* The third and final course in the Cyber Security pathway. This course focuses on network security concepts specific to Microsoft, Unix-based and Cisco systems. Topics include hacker prevention and intrusion detection, firewall installation and configuration, wireless network security, disaster recovery, access control lists, identification of malicious code, cryptography and forensics. Students will collaborate to plan, install, and configure various network security elements regarding hardware, software, and media.

Engineering & Advanced Manufacturing

The Engineering & Advanced Manufacturing pathway is focuses on preparing students for careers in a complicated technical, mechanical world. Today’s manufacturing industry requires knowledge of highly automated, computerized equipment and the ability to work with innovative processes like 3-D design, biomedical engineering, smart home technology, and robotics. Students have several options for career-specific courses within this pathway, depending on their interest and college/career goals.

Advanced Manufacturing & Engineering: This year long course is the first in the EAM pathway and is organized into two individual components (mechanical engineering/manufacturing and electrical engineering). The course has four major units that allows the student to explore their creativity while developing and manufacturing a product. The major units covered will consist of design, prototyping, fabrication of product, and marketing/manufacturing. By integrating these

two disciplines, students will experience what it means to engineer, manufacture and market a product that is completely synthesized from their own imagination. **(approved UC “g” elective)**

Robotics: This course covers introductory topics for careers in high demand technical fields such as advanced manufacturing, web and app design, electrical engineering, or even computer programming. The course covers five of the most useful basic programming languages, and the basics of electrical engineering and micro-controller programming. These skills are built upon each other and framed within the contexts of creating innovative projects from robotic arms and autonomous programmable robotics, smart home technology, app development and web design. Students will through the use of everything from wireless Bluetooth control, Infrared Remote Control, and high tech sensors to provide our students with the foundations to grow lifelong skills within the ever expanding world of robotics, engineering, and technology. **(pending UC “g” elective approval)**

Machine Tool Technology and Advanced Machine Tool Technology: These courses are a two year sequence that instruct students on metal working, engineering and the manufacturing processes. Areas of work include: welding (gas, arc, spot and mig), foundry (casting liquid metal), forging, sheet metal, and machine tools (lathe, mill, grinding). A strong emphasis is placed on skill development (planning and practical skills) and understanding. Students can earn an industry certification for welding.

Computer Aided Design (CAD): Computer-aided design and drafting (CAD) is important within the advanced manufacturing industry used to create engineering designs. In this course, students are introduced to engineering, learning the basics of CAD software: creating points, lines, other geometric forms, isometric drawings, and 3D models. Students will create designs into a three-dimensional (3D) environment and use machines or 3D printers to execute their designs. Students will be introduced to the areas of mechanical drafting which will include single and three view drawings, isometric, oblique and sectional drawings. Students will also learn fundamentals of architectural drafting through drawing floor, elevation, plot, and electrical plans. **(pending UC “g” elective approval)**

Smart Home Design: Smart Home Design will serve as a concentrating course within the Advanced Manufacturing Pathway. It will build upon other courses taken by students and provide real-world experience in experimenting with manufacturing designs of their choice. Smart Home Design is a laboratory-based class wherein students develop skills in automating a home. Students will learn how to install and control the following types of systems: security, surveillance, lighting, stereo, HVAC, programmable thermostat, phone, motion detection, vehicle detection, irrigation, pool, and spa systems. Students learn about installing and controlling the automated devices in a home that use the internet. Students will also learn about interface options and software applications necessary to monitor devices remotely from any computers that has an internet connection, or from any smartphone or tablet. Students will utilize the skills and principles learned in Advanced Manufacturing Pathway courses including designing, fabrication, electric engineering and programing language. Students will build a “mock up” home and install systems. **(pending UC “g” elective approval)**

Advanced Engineering Principles: This is the culminating course within our CTE Advanced Manufacturing Pathway. Advanced Engineering Principles is a laboratory-based class wherein students propose a culminating project that utilizes the skills and principles learned in Advanced Manufacturing Pathway courses including designing, fabrication, electric engineering and programing language. Similar to a dissertation, students will propose a project including an inquiry they wish to find the answer to. The instructor will serve as an advisor/facilitator helping students to observe, question and to experiment with designs. Students will be encouraged to think critically, logically and to defend conclusion as is expected in the advanced

manufacturing industry. Students will be required to present and defend their culminating project at the end of the course including proficiency of key industry skills. **(pending UC “g” elective approval)**

Auto Mechanics: This course is designed for students desiring a broad knowledge of auto mechanics. Students will be required to put their knowledge to work by completing many diagnostic and auto repair procedures. Training will be given in the proper use of the tools and equipment that are found in a general service garage. Students will be encouraged to participate in Skills USA, the school vocational club.

Advanced Auto Mechanics: This year two course is a hands-on shop experience with an emphasis on practical, real-life skills and logical troubleshooting using current text, data, and equipment. Students design their own project for this class.

Electric Vehicle Technology: This course provides basic hybrid electric vehicle safety procedures, and provides instruction on common hybrid electric vehicle component fundamentals and current hybrid vehicle design. Students receive an introduction to hybrid electric vehicle maintenance and troubleshooting and an introduction to hybrid electrical vehicle test equipment and procedures.

Agriculture

See course catalogue for previously approved Agriculture courses.

New for 2017-2018:

Sustainable Agri-Biology: This one year course, organized into four major units, integrates biological science practices and knowledge into the practice of sustainable agriculture. Unit one addresses the question, What is sustainable agriculture? Unit two, How does sustainable agriculture fit into our environment? Unit three, What molecular biology principles guide sustainable agriculture? Unit four, How do we make decisions to maximize sustainable agricultural practices within a functioning ecosystem? Within each unit, specific life principles integrate with agricultural principles, as students gain knowledge of how the two disciplines inform each other, culminating in the development of a sustainable farm model and portfolio of supporting student research. **(approved UC “d” Science course) **Replaces Ag Biology**

Chemistry and Agri-Science: This course explores the physical and chemical nature of soil as well as the relationships between soil, plants, animals and agricultural practices. Students examine properties of soil and land and their connections to plant and animal production. Using knowledge of scientific protocols as well as course content, students develop an Agriscience research program. To complete that whole project each student will investigate and test an Agriscience research question by formulating a scientific question related to the course content, formulating a hypothesis based on related research conducting an experiment to test the hypothesis, collecting quantitative data, and formulating a conclusion based on analysis of the data. The result of this research program is an in depth research and experimentation paper that is technically written, based on scientific protocol, and cited using APA formatting. Additionally, students develop and present a capstone soil management plan for agricultural producers, demonstrating their knowledge of the soil chemistry content learned throughout the course. Throughout the course, students are graded on participation in intracurricular FFA activities as well as the development and maintenance of an ongoing Supervised Agricultural Experience (SAE) program. **(approved UC “d” Science course)**

Digital Media Arts

See course catalogue for previously approved courses: **TV Production/Film, Advanced TV Production/Film**

New for 2017-2018:

Broadcast Media Productions: This course will develop and refine students' visual arts and communication skills through the exploration of both traditional and new media communication concepts and techniques. Throughout the course, students will learn how to find, craft, and produce stories as they collaborate on live broadcasts, commercials, interviews, documentaries, script writing, storyboarding, editing, and film promotion. In this course, students will also examine the ethics of broadcast journalism and the role of media information in today's world. Students will use analytical skills to expand their awareness of media messages and influences, as well as plan, create, and publish their work. Students will learn professional standards for various media industries and will improve group-based, collaborative work skills. Students will continually refine reading, writing, listening, speaking, and critical thinking skills, which are vital to college and career readiness. This course will also provide students interested in a career in broadcast media with industry relevant skills and experience. In this class, students will produce daily/weekly news and features packages, as well as short documentaries, public service announcements, podcasts, and commercials. Students will maintain a portfolio of their work and will perform a reflection of their growth and development at the end of the course. **(approved UC "g" elective)**

Hospitality & Restaurant Careers

See course catalogue for previously approved courses: Restaurant Occupations is now called **Culinary Arts** and Advanced Restaurant Occupations is now called ***Advanced Culinary Arts***

New for 2017-2018:

Advanced Culinary Arts: Baking This course provides students with the fundamental knowledge of baking science and artful techniques required of bakers and pastry cooks. Students will gain hands-on knowledge of classic and contemporary patisserie and baking processes in addition to beginning pastry arts. Course work is designed for students that desire a career as a baker or pastry chef. The program outcome is that students will be prepared for entry-level employment as professional and competent bakers, pastry cooks, or pastry entrepreneurs and meet the needs of retail and wholesale baking and pastry establishments. **(pending UC "g" elective approval)**