ANDERSON DISTRICTS 1 & 2
CAREER & TECHNOLOGY CENTER
Serving Belton-Honea Path, Palmetto, Powdersville, and Wren High Schools
702 Belton Highway ♦ Williamston, SC 29697
www.andersonctc.org ♦ 864.847.4121

The following programs are offered at the Career and Technology Center. Students must complete the Center's registration form in addition to the high school registration form. According to Board Policy, courses with low enrollment may be canceled. If a program is canceled or too many students enroll in a class, students may be placed in one of their other choices. Bus transportation is provided for all students.

AEROSPACE (Honors)

This program will equip students with the knowledge and skills to be successful in both college and the global workforce. Careers include systems, design, structural analysis, software and aerospace engineers; lab, avionics and radar technicians; materials planners; technical writers; air traffic controllers; pilots; drone designers; inspectors; and aircraft and airframe mechanics.

Fundamentals of Aerospace Technology - This project-based learning course engages students who are curious about aviation and aerospace careers. This course will introduce students to an engineering design process, tools to collect and analyze data, the science of aviation, materials and structures, and safety. Students will participate in real-world experiences such as designing, building and testing a pilot seat, kite, straw rocket and launcher, motor-powered rocket and a model glider.

Advanced Aerospace Technology - This course builds on the foundation of Course 1 and engages students in applying the design process, using tools to collect and analyze data, exploring a deeper level of the science of aviation and discovering how quality control systems work in the aviation field. Students will work collaboratively in teams to design, build and test a wing; plot a course for a plane to take off and land; design, build and test a wing attachment system; test materials under stress; and design, build and test an electric-powered plane. Students will demonstrate their newly acquired knowledge and skills by presenting their innovative ideas, techniques and solutions to business and industry partners.

Aeronautics Engineering Applications - This project-based learning course is for students who have successfully completed Courses 1 and 2. Students will learn about systems such as flight control, remote-control vehicles and the virtual world. Students will learn to fly using flight simulators. They will work collaboratively to propose a shift from a VOR navigation system to a GPS system and determine the cost savings. In addition, students will develop rotor blades for helicopters and design and program an unmanned flying vehicle.

Astronautics Engineering Applications - Students in this capstone course will focus on outer space and underwater applications. During the six projects, they will work collaboratively to design, build and test a laser communication system; develop a plan for space survivability in hostile environments; and utilize software to create a three-dimensional model of a satellite orbit and a team remote vehicle for underwater exploration. Depending on articulation agreements or state policy, students who successfully complete the course may be able to earn dual credit.

Drone Essentials - Students will investigate careers in this industry that is quickly approaching $100 billion and will build skills in manual operation and programing of drones. Students will prepare for the FFA Part 107 knowledge test and to become a Certified Remote Pilot.

AGRICULTURE AND ANIMAL SCIENCES

Plant, Animal and Wildlife Science is designed to prepare students for entry-level positions in the many aspects of plants, animal science, wildlife, forestry, and turf/lawn/golf course management. Graduates of the program may also pursue a college degree in a related area at a two- or four-year college.

Typical learning activities include growing, establishing and maintaining nursery plants, greenhouse crops, and turf grass; managing ornamental horticulture enterprises; designing landscapes; and studying golf course management. Students will be introduced to small animal care which would be very beneficial for those planning a career in veterinary science. Students will learn about the conservation of natural resources related to plants and wildlife including biotechnology. Students will also assess environmental factors affecting forest establishment and growth.

Participation in personal and community leadership and FFA activities is an integral part of this program.

AP COMPUTER SCIENCE (AP Credit)

The program's interdisciplinary courses engage students in compelling, real-world challenges. As students work together to design solutions, they learn computational thinking – not just how to code – and become better thinkers and communicators. Students take from the courses in-demand knowledge and skills they will use in high school and for the rest of their lives, on any career path they take. Computer Science courses are part of the AP pathway.

Intro to Computer Science – Students will experience the major topics, big ideas, and computational thinking practices used by computing professionals to solve problems and create value for others. This course will empower students to develop computational thinking skills while building confidence that prepares them to advance to Computer Science Principles and Computer Science A.

Computer Science Principles –AP- Using Python® as a primary tool, students explore and become inspired by career paths that utilize computing, discover tools that foster creativity and collaboration, and use what they've learned to tackle challenges like app development and simulation. This course is endorsed by the College Board, giving students the opportunity to take the AP CSP exam for college credit.

Computer Science Applications – AP- Students collaborate to create original solutions to problems of their own choosing by designing and implementing user interfaces and Web-based databases, as well as creating a game for their friends or an app to serve a real need in the their community. This course is aligned to the AP CSA framework.

Cybersecurity - Whether seeking a career in the growing field of cybersecurity or learning to defend their own personal data or a company's data, students in Cybersecurity establish an ethical code of conduct while learning to defend data in today's complex cyber world.

All students applying to this program must meet the following eligibility requirements: Algebra I or recommendation from their Math or Science Teacher.

AUTOMOTIVE COLLISION

The Automotive Collison program provides hands-on training in a fully integrated, state-of-the-art facility. The program content includes training on modern equipment such as a state-of-the-art, downdraft, infrared cure system paint, Lesonal computerized paint mixing system, and a Car-o-liner rack structural measurement and alignment system. The course also includes training in communication, leadership, human relations, employability skill and safe efficient work practices. Included in the curriculum is the I-Car Professional Development program, which is highly regarded and often required in the automotive collision industry. It prepares students for employment in the auto body and refinishing industry and for post-secondary education.

This course includes opportunities to complete several ASE (Automotive Service Excellence) industry certification modules such as Non-Structural Repair, Refinishing, Coating Applications, and Safety and Pollution Prevention.

AUTOMOTIVE TECHNOLOGY

The Automotive Technology program is a hands-on training facility with a state-of-the-art support lab, computer training lab and engine training lab. Students will use the main support lab to learn vehicle theory and operation in addition to repair techniques using equipment such as the Snap-on Diagnostic Scan Tool, Hunter Four-Wheel Alignment System, and much more. The students will also have the ability to work on several trainer vehicles as well as an opportunity for live repair work. The majority of the student's time will consist of practical hands-on application through the NATEF (National Automotive Technicians Education Foundation) curriculum. The course also includes training in communication, leadership, human relations, employability skill and safe efficient work practices.

CONSTRUCTION

Construction courses are designed to prepare students for college and employment in the building construction industry. The program provides necessary skills to enter the home-building, general contracting, and related industries.

Sophomore students are introduced to job site safety, tools of the trades, employability skills, and basic blueprint reading skills.

Upper level students gain knowledge and skills in the areas of site layout and distance measuring, concrete handling, form building, and residential framing skills. In addition, students are introduced to basic residential electrical wiring and plumbing skills used in plumbing both residential and commercial applications. Emphasis is placed on application of classroom knowledge through a variety of "hands on" projects.

COSMETOLOGY

Cosmetology is designed to prepare students to qualify for the state board licensing examination upon completion of the program. Students receive training in the care of hair, skin, and nails. The course study includes scalp treatment, hair shaping, hair styling, setting, permanent waving, tinting, coloring, and chemical relaxers. Care of skin and nails includes manicures and pedicure, massages, facials, applying makeup and hair removal. Also included in the course of study is salon planning and management.

This is a three-year program beginning in the 10th grade. Students that are accepted into this program must complete the entire three years. According to State Board regulations, only a limited number of students may be enrolled. To receive their state license, students must pass the state licensing exams and complete the State Board required 1,040 hours. These exams include both theory and practical applications which are very rigorous.

Selected students must attend a conference to be considered for the program.

CULINARY ARTS

Culinary Arts is a challenging course offering training in all aspects of food preparation and service. The introductory program covers kitchen orientation, safety and sanitation, as well as basic kitchen technique and food preparation.

The junior and senior classes incorporate the ProStart curriculum. Students will become proficient in knife skills, food safety, kitchen essentials, recipe adjustment, purchasing, food costing, menu planning, preparation and service, basic nutrition, garnishing techniques, and cake decorating skills.

Opportunities to compete in culinary and restaurant management competitions are also available.

Students may also earn the ProStart Certificate of Achievement and/or national ServSafe certifications**.**

DIGITAL ART DESIGN

Digital Art Design 1- This course introduces students to the computer as an instrument to create page layout, vector art, and digital design. Industry standard software is taught and will focus on raster images using layers and compositing techniques and vector art using Bezier curves. Students will use the images they capture, learning how to process and incorporate them into projects that communicate an effective message. Students will also learn the functions of the Mac computer and how to troubleshoot technology. Current software featured is: Adobe Photoshop CC and Adobe Illustrator CC. Concepts learned in this class are two-fold: one is a great foundation for anyone pursuing a career in the print industry, for production artists, illustrators, animators, and graphic designers. The other, is an introduction to a career in photography, advertising, digital art, retouching and restoration.

Digital Art Design 2- Is a course is designed to teach students basic levels of graphics creation through the use of software programs employed by design and interactive-media companies worldwide. This course emphasizes graphic design from a production point of view, as students gain a thorough understanding of input/output techniques, color theory, and tools for graphic design and image creation. This course will also expand students' knowledge of digital color models and image-compositing techniques.

Digital Art 3 & 4 - Visual messaging is about much more than aesthetic; it's also about behavior and identity. Art can influence consumers, build bridges between individuals and organizations, and inspire conversation. Adobe CC will be used for design creation, along with the opportunity to use tablets.

Digital Art Design 4 provides a comprehensive understanding of the entire design process and the field of design – from print publishing to interface design, from concept to creation, from presentation to implementation. You'll sharpen your eye for aesthetics through projects, critiques, and the study of popular culture. Throughout the curriculum, you'll explore the foundational elements of design and master software used by current design professionals. In addition to technical proficiency and creative development, your education will help you hone real-world skills such media integration, advertising and branding. This will include typography and page layout, digital publishing and design and art theory. A portfolio will be created and completed with all skills gained over the length of the course.

ENGINEERING (Honors Credit)

The national program, **Project Lead the Way,** has developed a sequence of courses which, when combined with college preparatory mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering and engineering technology prior to entering college. This is a program that will help students understand the field of engineering/engineering technology. Students use 3-D computer modeling software and explore various technology systems and manufacturing processes to learn how engineers and technicians use math, science and technology in an engineering problem solving process to benefit people. The program also includes concerns about social and political consequences of technological change. This program is highly recommended for those students planning to major in engineering. Students may receive college credit each year by passing a national exam.

Introduction to Engineering Design - Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects like designing a new toy or improving an existing product.

Principles of Engineering - Students explore a broad range of engineering topics including mechanisms, strength of structure and materials, and automation, and then they apply what they know to take on challenges like designing a self-powered car.

Aerospace Engineering - Students explore the physics of flight and bring what they're learning to life through hands-on projects like designing a glider and creating a program for an autonomous space rover.

Civil Engineering and Architecture - Students learn important aspects of building and site design and development, and then they apply what they know to design a commercial building.

Computer Controlled Machinery- is a course developed by Dorian McIntire at TCTC. It covers the fundamentals of robot geometry, control mechanisms, sensors, programming, installation, safety and maintenance, and other computer-controlled systems. Utilizing the activity-project-problem-based (APB) teaching and learning pedagogy, students will progress from completing structured activities to solving open-ended projects and problems that require them to develop

planning, documentation, communication, and other professional skills. Through both individual and collaborative team activities, projects, and problems, students will problem solve as they practice common design and development protocols such as project management and peer review. Students will develop skill in engineering calculations, technical representation, documentation of design solutions according to accepted technical standards, and use of current microcontroller (Arduino) programming to represent and communicate solutions.

Computer Integrated Manufacturing - Students discover and explore manufacturing processes, product design, robotics, and automation, and then they apply what they have learned to design solutions for real-world manufacturing problems.
Digital Electronics - Students explore the foundations of computing by engaging in circuit design processes to create combinational logic and sequential logic (memory) as electrical engineers do in industry.
Environmental Sustainability - Students investigate and design solutions in response to real-world challenges related to clean and abundant drinking water, food supply, and renewable energy.
Engineering Design and Development - Students identify a real-world challenge and then research, design, and test a solution, ultimately presenting their unique solutions to a panel of engineers.
***All students applying to this program must meet the following eligibility requirements: Algebra I or recommendation from their Math or Science Teacher.**

FIREFIGHTING (EMT – Upstate EMS)

Firefighting is designed to give students the knowledge and understanding of the basic concepts of emergency and fire services. Students will learn about safety, career opportunities and pathways with the fire and EMS career fields; federal, state and local regulations/standards; technological skills, operation of emergency vehicles and much more.
CPR, First Aid and EMT Certifications are available. Students may also receive IFSAC Firefighter Certification I, IFSAC Firefighter Certification II, and Auto Extrication, Rescuing the Rescuer, Hazardous Materials Awareness and Hazardous Materials Operations through the South Carolina Fire Academy.

GRAPHIC COMMUNICATIONS

Graphic Communications is designed to introduce students to the total printing production process from design and electronic imaging through press work and finishing/bindery operations. It prepares students for the broad range of employment opportunities available in the printing industry. A balance of classroom study and practical application assures the development of a solid theoretical background, good production skills and appropriate work attitudes. Student may earn one of the industries 1st basic certifications the Flexo Level 1.
All design work is created on iMac computers using Adobe Creative Cloud. The major printing processes studied are Flexography, Screen Printing and Digital Printing. Additional areas studied include dye sublimation, vinyl letter cutting and direct to garment printing.
Graduates of this program may pursue careers in graphic design, electronic imaging, quality assurance, platemaking, press assistant, bindery and finishing work, to name a few. Employment may be found in small printing shops, large printing plants or in the graphic arts departments of companies that publish materials in-house.

HEALTH SCIENCE

Health Science provides student an innovative, integrated learning environment designed to provide students with the medical skills and training necessary to succeed in postsecondary healthcare career education and/or to successfully transition into the healthcare workforce.
The program provides training in medical terminology, anatomy, physiology, and other subjects that are common in all health careers. Completion of certification in CPR/AED is possible.
During the senior year students will complete Health Science 3; which is the focus of Medical Terminology with a continuation in human body systems and how they work (anatomy and physiology).
Upon successful completion of Health Science 3 students may choose between 4 options for their second class:

1) Clinical study - enables the student to intern in a health related field
2) CNA Clinical Course - **Requires an applications and review process**
3) EMT certificate program - offered by the Firefighting program if space is available. -
4) Agriculture Veterinary Science offered through the Agriculture program if space is available.

LAW ENFORCEMENT

Law Enforcement is designed for students who are interested in law enforcement as a career or in one of the many related fields to include juvenile justice, probation and parole, corrections, forensics, federal law enforcement and military police.
The sophomore class will be introduced to several “hands on” practical skills such as handcuffing, baton tactics, finger printing, and latent print development.
Juniors will concentrate on patrol tactics, criminal law, court procedure and constitutional law.
Seniors will concentrate on advanced patrol, criminal investigations, forensics and dispatching.
Their 911 dispatching course will offer a national certification upon successful completion of a course study and final examination.
EMT Certifications are available in the EMS course offered by the Firefighting program if space is available.

MARKETING

The Marketing Program prepares students for college and high demand business and marketing careers through an engaging, project-based curriculum. Students learn how to promote products, services, and ideas using various forms of digital advertising: television, radio, internet, social media, mobile, and more. They also gain the skills and knowledge needed to start their own business, create and understand financial reports for a business, and manage and lead a business or organization.
Sophomores explore the field of digital media and develop technical skills through hands-on projects involving audio, video, graphics, and web development. The culminating project (final exam) is a digital portfolio that showcases students’ work during the semester.
Juniors explore traditional marketing and video marketing as they learn to develop compelling visual marketing messages in the form of Web-based videos, blogs, webcasts, print ads, press releases, and more.
Seniors explore social media platforms such as Facebook, Instagram, Twitter, and YouTube as they create a social media plan for a business. They learn how to develop compelling social media content using a variety of digital apps and tools. Seniors also explore various aspects of managing and leading a business as well as how to create and interpret a variety of financial reports used by businesses. Seniors have the opportunity to earn industry certifications valued by employers.
Career opportunities in this field include Marketing Manager, Social Media Manager, Public Relations Specialist, Communications Director, Community Manager, Media Buyer, Entrepreneur, and more.

MECHATRONICS (Dual Credit)

This three-year program offers dual credit through Tri County Technical College. Mechatronics is a dynamic field that changes daily with the rapid improvements in technology and computer systems. If you like to work with highly automated equipment, computers, hydraulics and pneumatics, and if you like to see what things are made of and how they work using both your mind and your hands, you will enjoy this program. Mechatronics is a new interdisciplinary field involving mechanical systems, instrumentation, electronics, robotics, automation, computers and control systems. Systems are networked together to meet the demands of highly automated manufacturing processes.

Mechatronics technicians are trained to master the skills necessary to install, maintain and repair this sophisticated equipment. Industry depends on well-trained electromechanical technicians to keep production machinery operating. Students learn skills to diagnose, repair, install, and service electrical, hydraulic, pneumatic, and electromechanical systems.

Students may continue their education at TCTC after their senior year and receive an associate (two-year) degree in Mechatronics.

All juniors applying to this program must meet the Tri-County Technical College eligibility requirement of a 75 average.

MEDIA BROADCASTING

This program is a general introduction to students interested in pursuing a career in media broadcasting. In this course, you will learn the basic skills needed to work in radio, motion pictures, television, and other electronic communications media. Students will develop formal critiquing skills, study the history of film and television, the fundamentals of advertising, and take a "hands-on" approach to developing and demonstrating the skills needed in all aspects of film making. Examples of projects the students will be involved in are stop-motion animation, film criticism, advertisement production, music video production, web videos, and full length films. Productions in the CTC Radio Station "WBBP-The Pulse" and TV facilities offer an opportunity to experience the field of broadcasting.

Class time will include discussion of current trends and issues in the field, with students developing an understanding of broadcast media. Whether it is information or entertainment, the wide appeal of the electronic media has created an increasing need for people skilled in the digital video/radio production arts.

Project Lead the Way: BIOMEDICAL SCIENCE (Honors Credit)

This three year program is a **Project Lead the Way** curriculum designed to provide rigorous and relevant curriculum that is project and problem based in order to engage and prepare high school students for the post-secondary education and training necessary for success in the wide variety of careers associated with the Biomedical Sciences.

Principles of Biomedical Science involves the study of human medicine, research processes and an introduction to bio-informatics. Students investigate the human body systems and various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia and infectious diseases.

Human Body Systems class will engage the students in the study of basic human physiology.

Medical Interventions Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

Biomedical Innovation class is a capstone course that gives student teams the opportunity to work with a mentor, identify a science research topic, conduct research, write a scientific paper, and defend team conclusions and recommendations to a panel of outside reviewers.

Students may receive college credit each year by passing a national exam.

All students applying to this program must meet the following eligibility requirements: Algebra I or recommendation from their Math or Science Teacher.

PROGRAMMING AND GAME DESIGN

Fundamentals of Computing: We will cover the basics of a wide variety of IT subjects. From Hardware and troubleshooting, to programming and web design, and even networking. Even if you know nothing about computers, you can leave this class knowing a lot.

Programming 1 & 2: In this class we will cover the basics of programming, and the life cycle of software development. We will learn to be problem solvers, and how to automate processes using the Python Programming language.

Game Design: We will take the problem solving and programming skills, and use those to make games. All games run on code, and you will get to play the games you make! Maybe it's a Pokémon or Minecraft clone.

Java 1 & 2: In this class we continue to build on those programming skills and cover more advanced concepts. We will also learn a new language in the form of Java! With this, Python, and the game design classes together, students will walk away knowing three programming languages.

SPORTS MEDICINE

Sports Medicine emphasizes a career exploration and the prevention of athletic injuries, including the components of exercise science, kinesiology, anatomy, principles of safety, first aid, cardiopulmonary resuscitation (CPR), and AED use. Subject matter also includes legal issues, members of the sports medicine team, nutrition, protective sports equipment, environmental safety issues, principles of taping and wrapping, mechanisms of injury, and application of other sports medicine concepts.

Students interested in healthcare careers in athletic training, physical therapy, medicine, exercise physiology, nursing, biomechanics, nutrition, psychology, and radiology will benefit from this course.

WELDING/METAL WORKING TECHNOLOGIES (Dual Credit)

Welding/Metal Working Technology involves the study of the weld-ability of metals, the physical properties of the metals, and the testing of welded joints. Laboratory experiences are provided which bring the student in contact with the latest developments in welding techniques. The student will develop skills in shielded metal arc welding, also gas shielded arc processes T-I-G and M-I-G, oxyacetylene welding, heating, cutting, and brazing ferrous and non-ferrous metals**.** Equipment includes state-of-the-art welding machines, a 90-ton Iron Worker, and a Vertical Milling Machine and Lathe.

The course also includes training in communication, leadership, human relations, employability skill and safe efficient work practices.

In addition, students will earn college credit from Tri-County Technical College their senior year, graduating with an SMAW Structural Welding Certificate.

All students applying to this program their senior year must meet the following Tri-County Technical College eligibility requirement: 75 average.