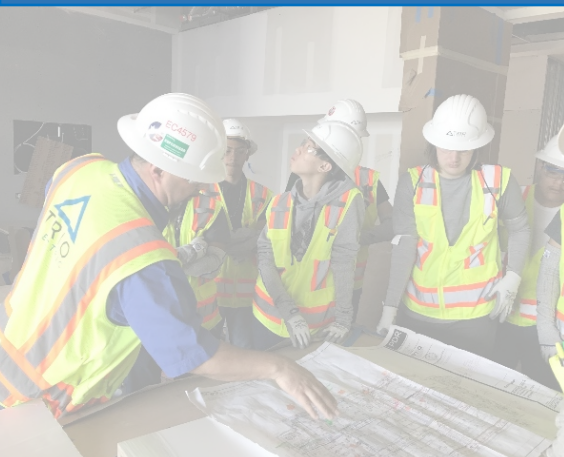




Career and Technical Education

Spring Branch Independent School District



CTE Pathways

2019 – 2020



Pathway	Endorsement	CTE Cluster	Academy of Choice	Guthrie Center	Memorial High School	Northbrook High School	Spring Woods High School	Stratford High School	Westchester Academy of International Studies
Animal Science	Business and Industry	Agriculture, Food and Natural Resources (ANFR)		✓					
Plant Science	Business and Industry	Agriculture, Food and Natural Resources (ANFR)		✓					
Oil and Gas	Business and Industry	Agriculture, Food and Natural Resources (ANFR)		✓					
Architectural Design	Business and Industry	Architecture and Construction		✓					
Electrical Technician	Business and Industry	Architecture and Construction		✓					
Construction Tech	Business and Industry	Architecture and Construction				✓	✓		
3D Animation	Business and Industry	Arts, Audio/Video Technology and Communication		✓					
Commercial Photography	Business and Industry	Arts, Audio/Video Technology and Communication		✓					
Filmmaking	Business and Industry	Arts, Audio/Video Technology and Communication		✓					
Graphic Design	Business and Industry	Arts, Audio/Video Technology and Communication		✓					
General Business	Business and Industry	Business Management and Administration/Finance/Marketing	✓		✓	✓	✓	✓	✓
Finance	Business and Industry	Finance			✓	✓	✓	✓	✓
Culinary Arts	Business and Industry	Hospitality and Tourism		✓					
Hotel Management	Business and Industry	Hospitality and Tourism		✓					
Culinary Science	Business and Industry	Hospitality and Tourism				✓	✓		
Computer/Info Tech	Business and Industry	Information Technology		✓					
Welding	Business and Industry	Manufacturing					✓		
Engineering	STEM	STEM			✓		✓	✓	
Education and Training	Public Services	Education & Training			✓	✓	✓	✓	
Health Care Professional	Public Services	Health Science			✓	✓	✓	✓	
Pharmacy Technician	Public Services	Health Science		✓					
Cosmetology	Public Services	Human Services		✓					
Early Childhood	Public Services	Human Services				✓	✓	✓	
Law	Public Services	Law, Public Safety, Corrections and Security		✓					
NJROTC	Public Services	JROTC		✓					

**CTE Pathways
2019-2020**

Business and Industry Endorsement		
Cluster	Pathway	Pathway Description
Agriculture, Food and Natural Resources	Animal Science Pathway	<p>The Animal Science pathway is part of our Agricultural Sciences program at Guthrie designed to give students who enjoy being around animals the opportunity to learn and work with them on our seventeen acre farm. Come ready to work with livestock animals, such as horses, cattle and pigs, as well as companion animals such as dogs and cats. If you have an interest in entering the veterinary field or just want to learn more about animals and their role in our society, this pathway is designed for you. Take up to six semesters of Animal Science courses preparing students to attain the Certified Veterinary Assistant certificate or for success for on college entrance, internships, or immediate employment.</p> <p>Although not required to enjoy the program, students have an opportunity to raise their own livestock animal to show at the Spring Branch ISD Show & Sale through Spring Branch FFA.</p>
Agriculture, Food and Natural Resources	Plant Science Pathway	<p>The Plant Science pathway is part of our Agricultural Sciences program at Guthrie designed to give students who enjoy plants an opportunity to learn and work with them on our seventeen-acre farm, two-acre garden and greenhouse. If you have an interest in entering the horticulture, wildlife or floral field or just want to learn more about plants and their role in our society, this pathway is for you. You can take up to seven semesters of Plant Science courses to prepare you for the Texas High School Floral Design certification or for success in college entrance, internships or immediate employment. You can also earn your Texas Hunters Education certification if you plan to hunt in Texas or Texas Boaters Education certification if you want to operate many vessels on public waterways in Texas.</p> <p>Although not required to enjoy the program, students have an opportunity to participate in the Spring Branch ISD Show & Sale by raising a plant or animal project through Spring Branch FFA.</p>
Agriculture, Food and Natural Resources	Oil and Gas Pathway	<p>The Oil & Gas pathway is part of our Agricultural Sciences program at Guthrie is an outstanding way for you to get a solid head start in the high-demand, often high skill petroleum industry. Designed to give students who are interested in Oil & Gas an opportunity to learn the opportunities available while taking courses at our seventeen-acre farm. You can take up to five semesters of Oil & Gas, as well as related courses, courses preparing you to earn the industry-recognized Rig Pass certification that will help get you one-step closer to an internship, employment, or a successful college entrance.</p> <p>Although not required to enjoy the program, students have an opportunity to participate in the Spring Branch ISD Show & Sale by raising a plant or animal project through Spring Branch FFA.</p>
Architecture and Construction	Architecture Design Pathway	<p>Architectural Design at the Guthrie Center allows you to explore the many opportunities that are available in the field of architecture. Our core belief that critical thinking, creativity, and problem solving sparks the deepest learning means you will be introduced to architectural history and develop proficiency in architectural sketching, perspectives, and technical drawing. Industry-standard programs used in the architectural profession including AutoCAD, Revit, Photoshop, and SketchUp are embedded throughout the program</p> <p>Journey through the process of architectural design via personalized projects and participate in a Houston-area contest where you will network with practicing architects and professors of architecture. Guthrie students have won over 100 awards and used the competition as a catapult for acceptance to university architectural schools. Finish at Guthrie with a strong portfolio that can be used for admission to highly competitive schools, and join numerous Guthrie AD students who were accepted to top architecture schools throughout the state, nation and world.</p>

Business and Industry Endorsement

Cluster	Pathway	Pathway Description
Architecture and Construction	Electrical Technician Pathway	<p>The TRIO Electrician Pre-Apprenticeship Program at The Guthrie Center is an outstanding way for you to get a solid head start in the high-demand, high skill field of electrical work. Starting your junior year you will take classes at Guthrie taught by a master electrician, work in a paid internship during the summer between 11th and 12th grade, all while you earn dual credit from Houston Community College.</p> <p>Upon graduation, you should have your Level 1 Certificate for Electrician Helper from HCC. Qualified graduates can move immediately into the full-time, paid apprenticeship program at TRIO.</p>
Architecture and Construction	Construction Tech Pathway	<p>Construction Tech is the gateway to a career in multiple construction fields. Students will learn safety procedures, how to use hand and power tools, how to read construction drawings and materials needed for projects. This pathway allows students to learn about and create projects while gaining skills in project management.</p> <p>Students have the opportunity to earn multiple NCCER (National Center for Construction Education and Research) certifications in this pathway, which allow entry to the workforce upon graduation.</p>
Arts, Audio/Video Technology and Communications	3D Animation Pathway	<p>The Animation program at Guthrie pioneered the use of 3D software in Texas high schools and continues to set the standard for cinema-quality animation education. Bring your creativity and imagination to life while you become proficient in sketching, storyboarding, character rigging and motion capture using industry-standard programs including Maya, Sketchbook, After Effects, Premiere Pro and more. As your expertise develops, you will be able to utilize our Motion Capture Studio for realistic and natural movement to your projects.</p> <p>Any student with creativity, focus and attention to detail can be successful in 3D Animation. Drawing and sketching experience from Art classes is highly recommended, but not a required prerequisite. You can take up to four years of 3D Animation and develop an extensive digital portfolio for college entrance, internships or immediate employment.</p>
Arts, Audio/Video Technology and Communications	Commercial Photography Pathway	<p>The Commercial Photography program at Guthrie is an award-winning program that provides an opportunity to learn the fine art of communication, through artful images and photography. Discover your artistic voice and learn about the art of persuasion, entertainment, marketing, public relations and sales by planning and shooting a series of photographs that meet those needs.</p> <p>We start with the fundamentals of photography with digital SLRs commonly used in industry. Learn professional techniques in composition, lighting and studio that transforms you from a hobbyist into a sophisticated, professional artist. You will gain hands-on training and experience with professionals, software and equipment from the industry, make decisions about productions, solve problems, manage time and develop project management skills, all while you conduct professional photo shoots in our real-world studio. These transferable skills, along with giving and accepting artful critiques of work, will help mold you into an excellent photographer and can be applied to all aspects in life.</p>
Arts, Audio/Video Technology and Communications	Filmmaking Pathway	<p>Filmmaking is a unique, creative and innovative program that teaches you how to take an idea and transform it into a professional, broadcast-ready film. Learn the fine art of media communication through many hands-on production experiences and learn how to write, pitch, direct, edit and produce everything from a public service announcement to documentaries, short films, music videos, television talk shows and more. While gaining the technical aspects and techniques of professional filmmaking, you will learn how to build, manage and see projects to completion. Our program teaches problem-solving, time management, troubleshooting, teamwork and collaborative compromise as students work with a diverse network of students, adults and outside clients in order to produce their many film projects.</p> <p>Film students are highly encouraged to take their work to the next level by entering them in film festivals. Program requirements include producing a demo reel and production portfolio of work to show prospective employers or college advisors. Digital Filmmaking students enjoy positive recognition, employment and internship opportunities as a direct result of their work and professional productions created in our program.</p>

Business and Industry Endorsement

Cluster	Pathway	Pathway Description
Arts, Audio/Video Technology and Communications	Graphic Design Pathway	<p>The goal of the Graphic Design program is to develop and use your creative talents and communication skills. Graphic Designers shape our visual environment through the manipulation of type, image and space to transform messages into effective, powerful communications. Graphic design concepts are used to design logos, ads, magazines, online resources, interactive programs, motion graphics and titles. We begin with the principles of design, type, color theory and imaging techniques using digital resources. Your training will involve both manual and computer skills using Adobe software and products so you can design and create projects.</p> <p>Anyone with enthusiasm, focus, and attention to detail can be successful in Graphic Design. Drawing and sketching experience is optimal but not necessary for success. Society relies more and more on visual communication, and Graphic Design is a valuable skill for understanding and deciphering the world.</p>
Business Administration and Marketing	General Business Pathway	<p>The Business Administration pathway develops professional soft skills in students while providing content that allows the students to make meaningful real-world connections to life outside of high school. Students enrolled in business, marketing and finance courses will explore various business industries by research, discussion, visits, and hands on activities to discover industries of interest for future careers.</p> <p>Students have the opportunity to earn multiple Microsoft Office Specialist and Expert certifications while enrolled in business courses. These certifications equip a student to use Microsoft Applications in college and the workforce.</p>
Finance	Finance Pathway	<p>The Finance pathway is a great opportunity to understand how a business functions financially, including checks and balances, reporting, analysis and the stock market. Learn how to interpret business transactions for decision-making. If you have an interest in accounting beyond high school, this pathway will build a solid foundation for your future studies. Students have the opportunity to earn a QuickBooks Certified User certification in this pathway.</p> <p>Students in the Business and Finance pathways may participate in the Academy of Finance program. This opportunity is available to high school students interested in pursuing a career in the field of business or finance. The nationally recognized Academy of Finance includes both coursework and summer internships designed to give students real world exposure to their career interest while in high school.</p>
Hospitality and Tourism	Culinary Arts Pathway	<p>Culinary Arts at Guthrie encompasses the fundamentals of cooking, the science of baking, food service management, production skills and sanitation procedures. Along with guest chefs, we will help you develop and refine your creative side and master the steps of recipe development and event planning. Throughout the school year you will actually prepare and serve a variety of dining functions. Second year culinary students extend knowledge and experience in baking, protein selection, advanced nutrition and sustainability. Gain an understanding of front and back of the house roles and how these areas work together to create a successful operation. Practicum students with a sincere interest in becoming a chef will take Chef Training, or if running and managing a small operation like our campus coffee shop is your goal, take Cafe Operations.</p> <p>The culinary facility at Guthrie is a state-of-the-art, high-level system of teaching kitchens and labs that surpasses most culinary schools in Texas. Industry professionals and educators designed the facility, blending the best of both worlds to provide optimal hands-on learning.</p>
Hospitality and Tourism	Hotel Management Pathway	<p>Hotel Management is an off-campus internship located at the Omni Houston Hotel Westside, a luxury hotel located on I-10. You will find it hard to believe you are in high school as you experience real-world activities and learn job skills from the professionals at the Omni.</p> <p>Enjoy the ultimate in personalization as you choose your favorite departments for training experiences. Learn all about travel and tourism for a balanced look at the hospitality industry. Participate in exciting study trips to popular attractions throughout Houston and even have a chance to travel to New York City. Bus transportation to the Omni is provided.</p>

Business and Industry Endorsement		
Cluster	Pathway	Pathway Description
Hospitality and Tourism	Culinary Science Pathway	Culinary Science introduces the many opportunities for a career within the culinary industry. Students will learn about food and kitchen safety, preparation techniques, and various tools used in a kitchen while practicing recipes in the culinary lab. This pathway leads to the Culinary Arts pathway at Guthrie center or into food science for those more interested in science related to foods we eat. Students have the opportunity to earn the ServSafe Food Handler certificate in this pathway.
Information Technology	Computer/Info Tech Pathway	Hands-on training is the norm when taking Computer/Info Technology classes. Learn using the latest networking and computer hardware combined with current, personalized online curriculum to prepare for industry certifications. Computer Maintenance covers PC technology, networking and security. When you finish you assemble a computer, install an operating system and troubleshoot using system tools and diagnostic software. Cisco Networking cover administration of network environments and is a perfect follow up to Computer Maintenance. the Computer Technician practicum allows you to apply what you learn in actual on-the-job situations. Computer Programming gets you involved in developing programs and apps, and Geographic Information Systems (GIS) is accurately mapping data using ARC-GIS software.
Manufacturing	Welding Pathway	Welders in the Houston and Gulf Coast area are in high demand where careers demand high technical skills and creative minds. The welding pathway will teach multiple types of welding, shop safety and tools used in the industry. Students will practice their skills in the welding lab and have the opportunity to construct projects to completion in the pathway. If you have a desire to see projects go from “the ground up” learning to weld and entering the industry is for you. Students have the opportunity to earn multiple NCCER (National Center for Construction Education and Research) certifications in this pathway, which allow entry to the workforce upon graduation.
STEM Endorsement		
Cluster	Pathway	Pathway Description
Science, Technology, Engineering and Math	Engineering Pathway	STEM is everywhere in our lives. In the Engineering pathway, students will work collaboratively to create various projects utilizing automation and robotics. Fields of study include aerospace, civil engineering, computer integrated manufacturing and digital electronics. Students learn to adapt and create in hands-on environment with real world applications in engineering and programming experience. Throughout the pathway students gain an awareness of how engineers, and consequently themselves, can use math to solve the problems of our world. Engineering courses use the nationally recognized Project Lead The Way (PLTW) curriculum. Additionally, participants in the Engineering pathway have the opportunity to earn an Autodesk Inventor certification.

Public Services Endorsement

Cluster	Pathway	Pathway Description
Education and Training	Education and Training Pathway	Teachers are heroes on the front line have an opportunity to make a forever impact on a student's life. If you have a desire to be a teacher, the Education and Training pathway will explore human growth and development as related to education and instructional practices for use in a classroom. Students partner with a local elementary school early childhood teacher for a real-world experience while still in high school. Careers in education can begin immediately out of high school and continue through earning a degree to teach.
Health Science	Health Care Professional Pathway	<p>Houston is home to the largest medical center in the world and a leader in healthcare. Students in the health science pathway will learn about the many career paths in health care including research, patient care and medical technology. This pathway provides an opportunity to see healthcare in action in the state of the art simulation lab and onsite clinical rotations at a local health care facility. Careers are available immediately after high school with certifications earned in the pathway and students are able to continue their education to advanced careers in healthcare.</p> <p>Students can earn certification including EKG Technician, Certified Patient Care Technician, Phlebotomy Technician and American Red Cross First Aid/CPR/AED.</p>
Health Science	Pharmacy Technician Pathway	<p>The Pharmacy Technician Pathway prepares students for the fast-paced pharmacy industry by teaching pharmacy law, commonly used pharmaceutical products, and practical skills required to gain certification as a pharmacy technician. This high-demand, technical career can be your destination or entry point into the exponentially growing healthcare industry throughout the Greater Houston area.</p> <p>The Pharmacy Technician program will provide you the opportunity to earn your national Pharmacy Technician certification and immediately enter the field of prescription medicine.</p>
Human Services	Cosmetology Pathway	<p>The Cosmetology Program at Guthrie, approved by the Texas Department of Licensing and Regulation, provides a strong foundation in science, math, art and chemistry and specialized training in safety and sanitation procedures, haircutting, hairstyling and creative techniques in hair, nail and skin care. Our unique blend of classroom and online learning, hands-on workshops, guest artists, competitions and trips to successful business partners with salon entrepreneurship concepts will get you ready to embark on your exciting career.</p> <p>Upon successful completion of the two-year Cosmetology program, you are eligible to sit for the Texas licensing exam. Employability is just around the corner!</p>
Human Services	Early Childhood Pathway	The Early Childhood pathway teaches students how to inspire young minds by developing and creating engaging activities to utilize in the classroom to meet learning objectives. Students in this pathway have the opportunity to gain hands on experience working with an early childhood teacher and their students in a classroom setting during the school day. Throughout the pathway students gain understanding of the para-professional and professional opportunities that are available in early childhood education and develop skills necessary for success in this specialized career field.
Law, Public Safety, Corrections, and Security	Law and Criminal Justice Pathway	<p>Criminal Justice at Guthrie is the ideal pathway if careers in law enforcement and the legal system interest you. Explore avenues in law enforcement and the legal system to better prepare for success in these careers after your college-level course work, a requirement for any every level of Law Enforcement. Become well versed in the laws of the United States and Texas and how careers such as police officer, attorney, probation officer, forensic scientist and crime scene investigator apply these laws in their daily work routine.</p> <p>If you have a calling to serve others, the ability to keep a cool head under pressure, a desire to study and apply law to protect our rights and freedoms, this is for you.</p>

Public Services Endorsement

Cluster	Pathway	Pathway Description
JROTC	Navy JROTC Pathway	<p>The Navy Junior Reserve Officer Training Corps is a unique program, facilitated by senior Navy retired instructors, providing real hands-on leadership and management opportunities unlike any other high school program. NJROTC instills the pride of community service and good citizenship. A first year cadet can expect to be leading a squad by the completion of the first year and eligible to command the entire company of cadets by his/her senior year.</p> <p>Cadets plan, schedule, organize and execute a myriad of program activities to include local, regional and national competitive team activities including drill, marksmanship, physical fitness, orienteering (land navigation) and academics. The Spring Branch Navy JROTC unit has earned national academic honors for the past 13 years.</p> <p>The Navy provides all books, equipment and uniforms at no cost to students participating in the JROTC program. There is no military obligation to participate in the program. However, cadets completing two years of NJROTC who choose to enlist earn a rate increase of one pay grade upon completion of boot camp and cadets completing three years advance two pay grades, resulting in a significant increase in basic pay. Additional educational opportunities exist through attendance at any of the service academies such as the Naval Academy or through Navy ROTC scholarships.</p>

Agriculture, Food and Natural Resources (AFNR)

*Earn the Business and Industry endorsement by completing four credits within the CTE AFNR Cluster, including one advanced course, as noted by **(ADV)**.*

Animal Science Pathway

Course List:

- Principles of AFNR
- Small Animal Management
- Equine Science
- Livestock Production
- Vet Med Applications **(ADV)**
- Advanced Animal Science **(ADV)**
- Practicum in AFNR **(ADV)**

Plant Science Pathway

Course List:

- Principles of AFNR
- Landscape Design and Management
- Turf Grass Management
- Wildlife, Fisheries and Ecology Management
- Horticulture Science **(ADV)**
- Floral Design
- Advance Plant and Soil Science **(ADV)**
- Practicum in AFNR **(ADV)**

Oil and Gas Pathway

Course List:

- Principles of AFNR
- Agricultural Mechanics
- Oil and Gas Production I
- Oil and Gas Production II **(ADV)**
- Practicum in AFNR **(ADV)**

Course Selection Notes:

- All courses are taken through the Guthrie Center
- Some courses satisfy Math, Science or Fine Arts graduation requirements
- Additional agriculture courses may be available based on space for students to continue participation in FFA when pathway is complete
- A paid work experience in pathways may be available through the Guthrie Center Internship class

Certifications Available in Cluster:

- Certified Vet Assistant Level I
- OSHA 10
- International Association of Drilling Contractors Rig Pass
- Texas Florist High School Floral Certification
- Texas Hunter Education Certification
- Texas Boater Education Certification

Animal Science Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE AFNR Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Agriculture, Food and Natural Resources (AFNR)

Course ID: CTAG10/13000200
Credit: 1.0 (1 Semester)

Study how food, clothing, shelter, transportation, medicine and modern-day conveniences rely on agricultural products. Explore how agriculture affects government and international trade.



Livestock Production

Course ID: CTAG11/13000300
Credit: 1.0 (1 Semester)

Explore an introduction to livestock production including anatomy, nutrition, health care and information specific to various species.

- **Rec PR: Principles AFNR**



Advanced Animal Science* **(ADV)**

Course ID: CTAG15/13000700
Credit: 1.0 (1 Semester)

Deepen knowledge in livestock industry through In-depth studies include animal industry, anatomy and physiology, and livestock husbandry.

- **PR: Small Animal Mgmt, Equine Science or Vet Med Applications**
- **PR: Biology and Chemistry or IPC, Algebra I and Geometry**

AND

Small Animal Management AND Equine Science

Course ID: CTAG12/13000400 & CTAG13/13000500
Credit: 1.0 (0.5 + 0.5) (1 Semester)

Develop knowledge and skills pertaining to the selection, nutrition, grooming, reproduction, health and management of small animals.

Study the science of horses including genetics, anatomy, physiology/nutrition, diseases, pests, and management practices.

- **Must be taken concurrently**

AND

Vet Med Applications **(ADV)**

Course ID: CTAG14/13000600
Credit: 1.0 (1 Semester)

Learn the basics of the veterinary medical profession and gain skills in handling a wide variety of animals, assisting clients, office management and legal issues. Study common ailments and treatments as well as emergency care techniques.

- **PR: Livestock Production or Small Animal Mgmt/Equine Science**

OR

Practicum in AFNR **(ADV)**

Course ID: CAG82 A&B/13002500
Credit: 2.0

Participate in a supervised practical application of AFNR through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in AFNR.

Pathway Notes:

- Additional agriculture courses may be available based on space for students to continue participation in FFA when pathway is complete
- * Satisfies a high school Science graduation requirement
- A paid work experience in this pathway may be available through the Guthrie Center Internship class

Certification Available:
Certified Vet Assistant Level I

Plant Science Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE AFNR Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Agriculture, Food and Natural Resources (AFNR)

Course ID: CTAG10/13000200
Credit: 1.0 (1 Semester)

Study how food, clothing, shelter, transportation, medicine and modern-day conveniences rely on agricultural products. Explore how agriculture affects government and international trade.

AND

Landscape Design and Management AND Turf Grass Management

Course ID: CTAG25/13001900 & CTAG27/13001950
Credit: 1.0 (0.5 + 0.5) (1 Semester)

Learn techniques in designing, constructing, and maintaining planted areas and devices for the beautification of home and commercial grounds, including golf courses and turf management.

- **Must be taken concurrently**

OR

Wildlife, Fisheries and Ecology Management

Course ID: CTAG23/13001500
Credit: 1.0 (1 Semester)

Examine the management of game and non-game wildlife species, fish, and aqua-crops and their ecological needs as related to current agricultural practices.

Horticulture Science (ADV)

Course ID: CTAG28/13002000
Credit: 1.0 (1 Semester)

Learn plant growth and development, nutrition, media selection, plant identification and pest management. Study the principles of plant anatomy and physiology, taxonomy, and fundamentals of production and harvesting.

- **Rec PR: Principles AFNR**

AND

Floral Design **

Course ID: CTAG26/13001800
Credit: 1.0 (1 Semester)

Identify and demonstrate the principles and techniques related to floral design and understanding of the management of floral enterprises. Analyze and learn to create artistic floral arrangements.

- **Rec PR: Principles AFNR**

Advanced Plant and Soil Science * (ADV)

Course ID: CTAG29/13002100
Credit: 1.0 (1 Semester)

Learn about greenhouse management from germinating a seedling to marketing a finished product. Explore techniques involved with propagation, fertilization, and maintenance through investigations, laboratory practices, and field exercises.

- **PR: Horticulture Science**

OR

Practicum in AFNR (ADV)

Course ID: CAG82 A&B/13002500
Credit: 2.0

Participate in a supervised practical application of AFNR through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in AFNR.

Pathway Notes:

- Additional agriculture courses may be available based on space for students to continue participation in FFA when pathway is complete
- * Satisfies a high school Science graduation requirement
- ** Satisfies a high school Fine Arts graduation requirement

Certification Available:

Texas Florist High School Floral Certification
Texas Hunter Education Certification
Texas Boater Education Certification

Oil and Gas Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE AFNR Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Agriculture, Food and Natural Resources (AFNR)

Course ID: CTAG10/13000200
Credit: 1.0 (1 Semester)

Study how food, clothing, shelter, transportation, medicine and modern-day conveniences rely on agricultural products. Explore how agriculture affects government and international trade.

AND

Agricultural Mechanics

Course ID: CTAG30/13002200
Credit: 1.0 (1 Semester)

Learn how to do minor maintenance and repair related to farming and ranching. Explore electrical, plumbing, concrete work, carpentry, fencing, power tools and working with metals including welding.

Oil and Gas Production I AND Oil and Gas Production II (ADV)

Course ID: CTAG50/13001250 & CTAG51/13001260
Credit: 2.0 (1.0 +1.0)

Understand of components, systems, equipment, production, and safety regulations associated with oil and gas well production and maintenance. Explore careers in Oil and Gas including skills, abilities, tools, certification, and safety measures.

- **Must be taken consecutively in one school year**

Practicum in AFNR (ADV)

Course ID: CAG82 A&B/13002500
Credit: 2.0

Participate in a supervised practical application of AFNR through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in AFNR.

Pathway Notes:

- Additional agriculture courses may be available based on space for students to continue participation in FFA when pathway is complete
- A paid work experience in this pathway may be available through the Guthrie Center Internship class

Certification Available:

OSHA 10
International Association of Drilling Contractors Rig Pass

Architecture and Construction

*Earn the Business and Industry endorsement by completing four credits within the CTE Architecture and Construction Cluster, including one advanced course, as noted by **(ADV)**.*

Architecture Design Pathway

Course List:

- Principles of Architecture
- Architectural Design I
- Architectural Design II **(ADV)**
- Practicum in Architectural Design **(ADV)**

Electrical Technician Pathway

Course List:

- Principles of Construction
- Agriculture Mechanics
- Applied Mathematics for Technical Professionals
- Electrical Technician I
- Electrical Technician II **(ADV)**

Construction Tech Pathway

Course List:

- Principles of Construction
- Construction Technology I
- Construction Technology II **(ADV)**

Course Selection Notes:

- Courses vary between home campus and Guthrie Center
- Some courses satisfy Math graduation requirements
- Some courses offer dual credit through Houston Community College

Certifications Available in Cluster:

- Autodesk Certified User: AutoCad
- Autodesk Certified User: REVIT
- HCC Electrical Helper Certificate Level 1
- OSHA 10 Hour
- NCCER Core NCCER Electrical Level 1

Architectural Design Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Architecture and Construction Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Architecture AND Architectural Design I

Course ID: CTAC13/13004600 &
CTAC12/13004210
Credit: 2.0 (1.0 + 1.0)

Learn the design, history, techniques, and tools related to production of drawings, renderings, and scaled models for architectural purposes. Explore technical drafting; learn beginning computer aided drafting skills and lettering styles, how to read a blueprint and how to edit a set of commercial tenant improvement documents. Begin developing a student portfolio.

- **Must be taken consecutively in one school year**
- **PR: Completion/concurrent enrollment of Geometry**
- **Recommended PR: Art**

Architectural Design II (ADV)

Course ID: CAC22 A&B/13004700
Credit: 2.0

Study residential design; including building codes, site plans, interior design, room relationships and sizes, exterior design, conservation and environmental design and framing methods. Create projects for student portfolio including design, presentation using computer-aided drawing skills and building scaled models.

- **PR: Completion of Architectural Design I**

Practicum Architectural Design (ADV)

Course ID: CAC82 A&B/13004800
Credit: 2.0

Participate in a supervised practical application of architectural design through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in architectural design. Create a senior design project for student portfolio using the Autodesk Revit program.

- **PR: Completion of Architectural Design II**

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class

Certification Available:

Autodesk Certified User: AutoCad
Autodesk Certified User: REVIT

Electrical Technician Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Architecture and Construction Cluster, including one advanced course, as noted by **(ADV)**.

Partnership with TRIO Electric

The TRIO Electrician Pre-Apprenticeship Program at the Guthrie Center is an outstanding way for you to get a head start in the high-demand, high skill field of electrical work.

Beginning junior year, students take classes at Guthrie taught by a master electrician. Year one of program includes both Electrical Technician 1 and Mathematics for Technical Professionals concurrently.

Students work in a paid internship during the summer between 11th and 12th grade, and earn dual credit from Houston Community College while completing courses at the Guthrie Center.

Applied Mathematics for Technical Professionals *

Course ID: CTPM60/12701410
Credit: 1.0

Learn and apply a problem-solving model that incorporates analysis, formulating a plan, determining a solution, justifying the solution, and evaluating the reasonableness of the solution as related to the electrical industry. This includes mental math, estimation, and number sense to generate solutions and make connections and predictions, as used by electricians in the field.

- **PR: Completion of Algebra I**
- **Concurrent with Electrical Technician I**

AND

Electrical Technician I

Course ID: CTAC35/13005600
Credit: 1.0

Acquire the knowledge and skills related to safety, electrical theory, tools, codes, installation of electrical equipment, and the reading of electrical drawings, schematics, and specifications in the electrical industry.

- **Concurrent with Mathematics for Technical Professionals**

Electrical Technician II (ADV)

Course ID: CAC45 A&B/13005700
Credit: 2.0

Apply electrical concepts in safety, electrical theory, tools, codes, installation of electrical equipment, alternating current and direct current motors, conductor installation, installation of electrical services, and electric lighting installation.

- **PR: Completion of Electrical Technician 1 and Mathematics for Technical Professionals**

Pathway Notes:

- Principles of Construction, which is available at NHS and SWHS is a recommended course prior to entering the Electrical Technician pathway.
- Agricultural Mechanics, which is available at Guthrie Center is a recommended course prior to entering the Electrical Technician pathway.
- * Satisfies a high school Mathematics graduation requirement

Certification Available:

Red Cross First Aid/CPR
OSHA 10 Hour
NCCER Core
NCCER Electrical Level 1
Scissor Lift Operator Certification
HCC Electrical Helper Certificate Level 1

Construction Tech Pathway

Earn the Business and Industry endorsement by completing four credits within the CTE Architecture and Construction Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Construction

Course ID: CAC10 A&B/13004220
Credit: 1.0

Learn construction safety, mathematics, drawings as well as common hand and power tools used in general maintenance of residential and commercial property. Identify, plan and solve real problems using knowledge of construction practices.



Construction Technology I

Course ID: CAC14 A&B/13005100
Credit: 2.0

Expand knowledge and skills in construction related to safety tool usage, building materials, codes and building framing. Learn about other construction trades including electrical, plumbing and HVAC.



Construction Technology II (ADV)

Course ID: CAC24 A&B/13005200
Credit: 2.0

Expand construction skills and explore interior and exterior finish out skills and cabinetry. Create simulated projects in other construction trades including electrical, plumbing and HVAC.

- **PR: Completion of Construction Technology 1**

Pathway Notes:

- Pathway available at NHS and SWHS. Verify specific course availability with campus Counselor.

Certification Available:

OSHA 10 Hour
NCCER Core

Arts, Audio/Video Technology and Communications

Earn the Business and Industry endorsement by completing four credits within the CTE Arts, AV Tech and Communications Cluster, including one advanced course, as noted by **(ADV)**.

3D Animation Pathway

Course List:

- 3D Animation I
Game Art with Lab
- 3D Animation II
Game Art with Lab **(ADV)**
- Practicum in 3D Animation **(ADV)**
- Practicum 2 in 3D Animation **(ADV)**

Commercial Photography Pathway

Course List:

- Commercial Photography I with Lab
- Commercial Photography II with Lab **(ADV)**
- Practicum in Commercial Photography **(ADV)**

Filmmaking Pathway

Course List:

- Film and Video Production I with Lab
- Film and Video Production II with Lab **(ADV)**
- Practicum in Film and Video Production **(ADV)**

Graphic Design Pathway

Course List:

- Graphic Design I with Lab
- Graphic Design II with Lab **(ADV)**
- Practicum in Graphic Design **(ADV)**

Course Selection Notes:

- All courses are taken through the Guthrie Center

Certifications Available:

- Adobe Certified Associate – After Effects
- Adobe Certified Associate – Photoshop
- Adobe Certified Associate – Illustrator
- Adobe Certified Associate – InDesign
- Apple Final Cut Pro – Certified Associate
- Autodesk 3ds MAX
- Autodesk Maya Certified User

3D Animation Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Arts, AV Tech and Communications Cluster, including one advanced course, as noted by **(ADV)**.

3D Animation I Game Art with Lab

Course ID: CAV11 A&B/
13008310
Credit: 2.0

Learn to develop and communicate animation ideas through 3D modeling, animation, concept drawings, storyboards, virtual lights and cameras, and scene design using the same techniques and software used by professionals.

3D Animation II Game Art with Lab **(ADV)**

Course ID: CAV21 A&B/
13008410
Credit: 2.0

Expand the skills and creativity developed in 3D Animation 1 including introduction to character design, 3D modeling and texturing a character, bone system and character rigging, effective in-depth storytelling, visual effects and post production techniques. Learn about Unreal game engine and integrated audio and sound F/X, as well as creating an online portfolio.

- **PR: Completion of 3D Animation I - Game Art with Lab**

Practicum in 3D Animation **(ADV)**

Course ID: CAV83 A&B/
13008450
Credit: 2.0

Utilize the latest technologies in 3D modeling and animation for developing real time graphics, to produce models and animations that relate to industrial projects such as: product visualization, oil and gas equipment, architectural scenes, and consumer products. Create professional-grade projects for student online portfolio using Autodesk software.

- **PR: Completion of 3D Animation II - Game Art with Lab**

Practicum 2 in 3D Animation **(ADV)**

Course ID: CAV93 A&B/
13008460
Credit: 2.0

Participate in a supervised practical application of 3D animation through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in 3D Animation. Create a senior design project for student portfolio completion.

- **PR: Completion of Practicum in 3D Animation**

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Certification Available:

Adobe Certified Associate – After Effects
Autodesk Maya Certified User

Commercial Photography Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Arts, AV Tech and Communications Cluster, including one advanced course, as noted by **(ADV)**.

Commercial Photography I with Lab

Course ID: CAV14 A&B/13009110
Credit: 2.0

Learn about the photography industry from setting up a shot to delivering products in a competitive market to develop professional photography skills. Explore photography using various cameras and lenses, photo composition, digital photography, lighting techniques and various types of display for photos.



Commercial Photography II with Lab **(ADV)**

Course ID: CAV24 A&B/13009210
Credit: 2.0

Expand technical skills in photography with a focus on producing, promoting and presenting professional quality photographs including safety, ethics in commercial print and management of a photography business. Develop skills through extended time in the photography studio and create projects for student photography portfolio.

- **PR: Completion of Commercial Photography I with Lab**



Practicum in Commercial Photography **(ADV)**

Course ID: CAV87 A&B/13009250
Credit: 2.0

Participate in a supervised practical application of commercial photography through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in commercial photography. Create professional-grade projects for student portfolio using Adobe Photoshop and Lightroom software.

- **PR: Completion of Commercial Photography II with Lab**

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Certification Available:

Adobe Certified Associate – Photoshop

Filmmaking Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Arts, AV Tech and Communications Cluster, including one advanced course, as noted by **(ADV)**.

Film and Video Production I with Lab

Course ID: CAV12 A&B/13008510
Credit: 2.0

Learn how to produce and direct film productions with a focus on pre-production, production, and post-production audio and video products. Create a demo reel of student work using Apple Final Cut Pro, a leading software used in professional film editing.



Film and Video Production II with Lab **(ADV)**

Course ID: CAV22 A&B/13008610
Credit: 2.0

Expand technical skills in pre-production, production and post-production including understanding regulatory requirements, broadcast standards and industry knowledge. Develop skills through extended time in the production studio creating and editing film projects for student portfolio.

- **PR: Completion of Film and Video Production I with Lab**



Practicum in Film and Video Production **(ADV)**

Course ID: CAV82 A&B/13008700
Credit: 2.0

Participate in a supervised practical application of film and video production through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in film and video production. Create professional-grade projects for student portfolio using Apple Final Cut Pro software.

- **PR: Completion of Film and Video Production II with Lab**

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Certification Available:

Apple Final Cut Pro – Certified Associate

Graphic Design Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Arts, AV Tech and Communications Cluster, including one advanced course, as noted by **(ADV)**.

Graphic Design I with Lab

Course ID: CAV13 A&B/13008810
Credit: 2.0

Learn the basics of color and design, illustration and the effective use of typography to display clients' products or services to customers using industry standard Adobe software. Design colorful, engaging and memorable advertising and marketing communications.



Graphic Design II with Lab **(ADV)**

Course ID: CAV23 A&B/13008910
Credit: 2.0

Expand knowledge in fundamental elements and principles of visual art and design in editorial, web and motion graphic design. Develop skills through extended time creating and editing graphic design projects using Adobe software for student portfolio.

- **PR: Completion of Graphic Design I with Lab**



Practicum in Graphic Design **(ADV)**

Course ID: CAV85 A&B/13009000
Credit: 2.0

Participate in a supervised practical application of graphic design through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in graphic design. Create professional-grade projects for student portfolio using Adobe Illustrator and InDesign software.

- **PR: Completion of Graphic Design II with Lab**

Pathway Notes:

- Graphic Design IV Practicum is available for students to continue an additional year of study within the pathway.
- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Certification Available:

Adobe Certified Associate – Illustrator
Adobe Certified Associate – InDesign

General Business Pathway

Earn the Business and Industry endorsement by completing four credits within the CTE Business, Finance or Marketing Cluster, including one advanced course, as noted by **(ADV)**.

Principles of Business, Marketing and Finance

Course ID: CBM11 A&B/13011200
Credit: 1.0

Discover a new world of opportunities in this course as you learn knowledge and skills used in business, finance and marketing.

**Choose 2
Credits**

Business Information Management (BIM) I

Course ID: CBM12 A&B/13011400
Credit: 1.0

Develop skills in the Microsoft Office Suite of programs.

Global Business

Course ID: CTBM15/
13011800
Credit: 0.5

Learn about the global marketplace and international trade.

Banking and Financial Services

Course ID: CTF11/
13016300
Credit: 0.5

Discover the dynamics of banking operations.

Social Media Marketing

Course ID: CTMK14/13034650
Credit: 0.5

Explore how to promote and grow a business online.

Sports and Entertainment Marketing

Course ID: CTMK15/
13034600
Credit: 0.5

Focus on the functions of marketing related to the business of sports.

Business Law

Course ID: CBM14 A&B
13011700
Credit: 1.0

Analyze the legal environment related to business.

Accounting I

Course ID: CF14 A&B/
13016600
Credit: 1.0

Gain an understanding of the checks and balances in business.

**Choose 1
Course**

Business Information Management (BIM) II (ADV)

Course ID: CBM22 A&B/13011500
Credit: 1.0

Expand skills in Microsoft Office to create complex business documents, spreadsheets and presentations.

- **PR: Completion of BIM I**

Financial Math * (ADV)

Course ID: CFI60 A&B/13018000
Credit: 1.0

Apply critical thinking skills to analyze financial decisions based on economic factors.

- **PR: Completion of Algebra I & Geometry**

Practicum in Business (ADV)

Course ID: CBM81 A&B/13012200
Credit: 2.0

Participate in a supervised practical application of business through classroom learning and a paid or unpaid work experience.

- **PR: 1 credit Business or Finance**

Career Prep (ADV)

Course ID: CCP81 A&B/12701300
Credit: 2.0

Participate in a learning experience that combines classroom instruction with paid business and industry employment.

Pathway Notes:

- * Satisfies a high school Mathematics graduation requirement
- Pathway available at AOC, MHS, NHS, SWHS, SHS and WAIS. Verify specific course availability with campus Counselor.

Certification Available:

Microsoft Office Specialist and Expert
Quickbooks Certified User

Finance Pathway

Earn the Business and Industry endorsement by completing four credits within the CTE Business or Finance Cluster, including one advanced course, as noted by **(ADV)**.

Business Information Management (BIM) I

Course ID: CBM12 A&B/13011400
Credit: 1.0

Develop skills in the Microsoft Office Suite of programs.

OR

Principles of Business, Finance and Marketing

Course ID: CBM11 A&B/
13011200

Credit: 1.0

Discover a new world of opportunities in this course as you learn knowledge and skills used in business, finance and marketing.



Accounting I

Course ID: CFI14 A&B/
13016600

Credit: 1.0

Gain an understanding of how business finance is handled by understanding checks and balances and completing an accounting cycle for both a service and merchandising business. Accounting 1 is a college prep course for Business majors.



Financial Math * (ADV)

Course ID: CFI60 A&B/
13018000

Credit: 1.0

Apply critical thinking skills to analyze personal financial decisions based upon current and projected economic factors.

- **PR: Completion of Algebra I & Geometry**



Accounting II * (ADV)

Course ID: CFI24
A&B/13016700

Credit: 1.0

Expand knowledge of fundamental accounting principles with extensive use of computerized accounting programs, studying the stock market, investing and corporate accounting.

- **PR: Completion of Accounting I**

Academy of Finance (AOF) Certificate

Students enrolled in the General Business or Finance Pathways have the opportunity to participate in AOF to gain additional experience in the finance industry. AOF requirements are:

- Application completed and submitted at home campus
- Complete Student Internship
- Optional: Student trip to Wall Street in New York

Academy of Finance Course Requirements:

- Business Information Management I
- Accounting I
- Financial Math **(ADV)**
- Accounting II **(ADV)** or 1 additional credit from: Principles of Business, Finance and Marketing; Global Business (0.5 credit); Banking and Financial Services (0.5 credit); Business Law

Pathway Notes:

- * Satisfies a high school Mathematics graduation requirement
- Pathway available at MHS, NHS, SWHS, SHS and WAIS. Verify specific course availability with campus Counselor.

Certification Available:

Microsoft Office Specialist and Expert
QuickBooks Certified User

Hospitality and Tourism

*Earn the Business and Industry endorsement by completing four credits within the CTE Hospitality and Tourism Cluster, including one advanced course, as noted by **(ADV)**.*

Culinary Arts Pathway

Course List:

- Culinary Arts I
- Culinary Arts II **(ADV)**
- Practicum in Café Operations **(ADV)**
- Practicum in Chef Training **(ADV)**

Hotel Management Pathway

Course List:

- Hotel I Hotel Management
- Practicum in Hospitality Services
- Hotel II Travel and Tourism Management **(ADV)**
- Practicum 2 in Hospitality Services **(ADV)**

Culinary Science Pathway

Course List:

- Introduction to Culinary Arts
- Culinary Arts I
- Food Science
- Career Prep II **(ADV)**

Course Selection Notes:

- Courses vary between home campus and Guthrie Center
- Some courses satisfy Science graduation requirements
- Some courses offer dual credit through University of Houston Conrad Hilton College

Certifications Available in Cluster:

- ServSafe Food Handler
- ServeSafe Food Service Manager
- AHLEI Certified Guest Service

Culinary Arts Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Hospitality and Tourism Cluster, including one advanced course, as noted by (ADV).

Culinary Arts I

Course ID: CHT14 A&B/13022600
Credit: 2.0

Learn the fundamentals of cooking, the science of baking, management and production skills, and safety/sanitation procedures related to a commercial kitchen. Explore recipe development and event planning through participation in hosting and catering various dining events.

Culinary Arts II (ADV)

Course ID: CHT24 A&B/13022650
Credit: 2.0

Expand knowledge of commercial and professional kitchen operations including front and back of the house roles and how these areas work together to create a successful operation. Learn about protein selection, advanced nutrition and sustainability related to menu planning. Practice baking skills, pastry creation and international cuisine recipes. Participate in preparation, hosting and catering of multiple dining events within the district.

- **PR: Completion of Culinary Arts I**

Practicum in Café Operations (ADV)

Course ID: CHT94 A&B/13022710
Credit: 2.0

Participate in a supervised practical application of café and catering business practices and kitchen operations through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in culinary arts.

OR

Practicum in Chef Training (ADV)

Course ID: CHT84 A&B/13022700
Credit: 2.0

Participate in a supervised practical application of higher-level cooking skills through classroom and on the job learning. Gain advanced culinary skills, tour restaurants and hotels and networking with industry professionals.

- **PR: Completion of Culinary Arts II**

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Certification Available:

ServSafe Food Handler
ServSafe Food Service Manager

Hotel Management Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Hospitality and Tourism Cluster, including one advanced course, as noted by **(ADV)**.

Hotel Management AND Practicum in Hospitality Services

Course ID: CHT11 A&B/13022300 &
CHT85 A&B/13022900
Credit: 3.0 (1.0 + 2.0)

Learn about the lodging industry including departments within a hotel such as front desk, food and beverage, housekeeping, guest services, engineering, human resources, sales and accounting. Gain hands-on practical experience in collaboration with Omni Hotel Westside.

- **Must be taken concurrently**



Travel and Tourism Management AND Practicum 2 in Hospitality Services **(ADV)**

Course ID: CHT13 A&B/13022500 &
CHT95 A&B/13022910
Credit: 3.0 (1.0 + 2.0)

Participate in a supervised practical application of hotel management in partnership with Omni Hotel Westside. Acquire employability skills and experience for pursuit of career opportunities in hospitality industry including cruise ships, airlines, amusement parks, hotels and resorts.

- **Must be taken concurrently**

Pathway Notes:

- Bus transportation to the hotel provided by SBISD.
- Students enrolled in the Hotel Management Pathway have the opportunity to participate in Academy of Hospitality and Tourism (AOHT) to gain additional experience in the hospitality industry

Certification Available:

AHLEI Certified Guest Service Professional

Culinary Science Pathway

Earn the Business and Industry endorsement by completing four credits within the CTE Hospitality and Tourism Cluster, including one advanced course, as noted by **(ADV)**.

Intro to Culinary Arts

Course ID: CHT04 A&B/13022550
Credit: 1.0

Learn about food production skills, various levels of culinary industry management, and hospitality skills. Explore equipment, ingredients, safety procedures and health regulations in a professional food setting.



Culinary Arts I (Guthrie)

Course ID: CHT14 A&B/13022600
Credit: 2.0

Learn the fundamentals of cooking, the science of baking, management and production skills, and safety/sanitation procedures related to a commercial kitchen. Explore recipe development and event planning through participation in hosting and catering various dining events.



Food Science * **(ADV)**

Course ID: CHT70 A&B/13023000
Credit: 1.0

Learn about the nature of foods, the causes of deterioration, the principles underlying food processing, and the improvement of foods for the consuming public. Conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving.

- **PR: Completion of Culinary Arts I**
- **PR: 3 credits science including Chemistry and Biology**

Pathway Notes:

- * Satisfies a high school Science graduation requirement
- Pathway available at NHS and SWHS. Verify specific course availability with campus Counselor.

Certification Available:

ServSafe Food Handler

Computer/Info Tech Pathway (Guthrie)

Earn the Business and Industry endorsement by completing four credits within the CTE Information Technology Cluster, including one advanced course, as noted by (ADV)

Choose 1:

Networking I with Lab

Course ID: CIT12 A&B/13027410
Credit: 2.0

Learn how to configure routers and set up small networks using commercial design and network administrator tools. Explore telecommunication and data network services, industry network requirements, and create and implement a network design plan.

Computer Programming I AND Computer Programming II (ADV)

Course ID: CTIT 13/13027600 &
CTIT16/13027700
Credit: 2.0 (1.0 + 1.0)

Learn how to utilize programming languages to solve business problems with various types of software and through creating a software application plan and IT project-based plan.

Expand knowledge in Computer Programming II through exploration of structured programming techniques and concepts by addressing problems that are more complex and designing and coding a software application.

- **Must be taken concurrently**

Computer Maintenance with Lab

Course ID: CIT11 A&B/13027310
Credit: 2.0

Learn how to assemble and configure computers, install operating systems and software. Explore how to set up/troubleshoot hardware, software and networks through hands-on activities and labs.

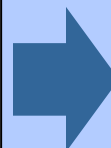
Geographic Information Systems (GIS) AND Raster Based GIS

Course ID: CTIT54/N1302805 &
CTIT55/N1302806
Credit: 2.0 (1.0 + 1.0)

Learn about Geographic Information Systems transferring GPS data and the analysis process using industry standard software and scientific methods to find trends and patterns in collected data and identify solutions to problems.

Expand knowledge through study of local problems, acquire information, including images or aerial photographs, process and merge the data with vector data. Students will plan, conduct, and present solutions for locally based problems.

- **Must be taken concurrently**



Computer Technician Practicum (ADV)

Course ID: CIT81 A&B/13027500
Credit: 2.0

Participate in a supervised practical application of computer tech business practices through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in information technology.

- **PR: completion of 2 credits in Computer Tech**

OR

Practicum in Information Technology (ADV)

Course ID: CIT82 A&B/13028000
Credit: 2.0

Participate in a supervised practical application of computer networking practices through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in computer networking.

- **PR: Completion of Networking I with Lab**

Certifications Available:

CISCO Certified Entry Networking Technician (CCENT)
CompTIA A+ Certification
CompTIA Network +
CompTIA IT Fundamentals
Java
SQL

Pathway Notes:

- A paid work experience in this pathway may be available through the Guthrie Center Internship class.

Welding Pathway

Earn the Business and Industry endorsement by completing four credits within the CTE Manufacturing Cluster, including one advanced course, as noted by **(ADV)**.

Introduction to Welding

Course ID: CMF03 A&B/13032250
Credit: 1.0

Learn basic welding laboratory principles and operating procedures including three basic welding processes. Explore industrial safety and health practices, hand tool and power machine use, measurement, laboratory operating procedures, welding power sources, codes and standards through lab activities.



Welding I

Course ID: CMF13 A&B/13032300
Credit: 2.0

Expand knowledge of welding techniques including joint design, symbols and welds, inspections and related codes. Create projects using oxy-fuel cutting processes, plasma arc cutting, shielded metal arc welding and gas metal arc welding practices.



Welding II (ADV)

Course ID: CMF23 A&B/13032400
Credit: 2.0

Gain mastery of the functions and applications of the tools, equipment, technologies, and metals used in code welding. Develop advanced welding skills for pursuit of career opportunities in welding through projects created in lab using multiple welding processes.

- **PR: Completion of Welding I**

Pathway Notes:

- Pathway available at SWHS.

Certification Available:

NCCER Core
NCCER Welding Level 1
American Welding Society (AWS) D1.1 Welding

Engineering Pathway

Earn the STEM endorsement by completing four credits within the CTE STEM Cluster, including one advanced course, as noted by **(ADV)**

Introduction to Engineering Design (IED)

Course ID: CST51 A&B/N1303742
Credit: 1.0

Study the engineering design process through activities, problems, and projects including engineering notebooks, prototyping, technical sketching, measurement and statistics, 3D computer solid modeling, and reverse engineering.

- **Prerequisite for all PLTW courses.**



Engineering Science/Principles of Engineering *

Course ID: CST52 A&B/13037500
Credit: 1.0

Study mechanisms, energy, statics, materials, kinematics, and computer control systems. Explore problem-solving skills and apply your knowledge of math, science, and design to create solutions to various challenges, document your work, and communicate solutions.

- **PR: IED, completion/concurrent enrollment of Algebra II**

**Choose
1 Course**

Aerospace Engineering

Course ID: CST71 A&B/N1303745
Credit: 1.0

Learn about development of new technologies for use in aviation, defense systems, and space exploration. Explore the evolution of flight, flight fundamentals, navigation and control, aerospace materials, propulsion space travel, orbital mechanics, ergonomics, remotely operated systems and related careers.

- **PR: IED**

Civil Engineering

Course ID: CST55 A&B/N1303747
Credit: 1.0

Learn about the design, construction, maintenance, and coordination of built structures and environments such as roads, highways, bridges, canals, dams, and some commercial and residential buildings. Explore both residential and commercial civil engineering projects using 3D CAD software.

- **PR: IED**

Computer Integrated Manufacturing

Course ID: CST57 A&B/N1303748
Credit: 1.0

Learn about modern manufacturing equipment and methods through exploration of robotics and automation, computer modeling, rapid prototyping, CNC programming, and flexible manufacturing systems.

- **PR: IED**

Digital Electronics **

Course ID: CST53 A&B/13037600
Credit: 1.0

Learn about electronic circuits used to process and control digital signals, the design process applied to the use of combinational and sequential logic, teamwork, engineering standards, and technical documentation. Analyze, design and build fundamental digital electronic circuits.

- **PR: IED, Algebra I & Geometry**

Engineering Design and Development * **(ADV)**

Course ID: CST58 A&B/
N1303749
Credit: 1.0

Capstone course working in student teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process.

- **PR: IED**

OR

Engineering Internship **(ADV)**

Course ID: CPG81 A&B/
12701300
Credit: 2.0

Participate in a supervised practical application of STEM Engineering through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in STEM fields.

Pathway Notes:

- * Satisfies a high school Science graduation requirement
- ** Satisfies a high school Mathematics graduation requirement
- Pathway available at MHS, SWHS and SHS. Verify specific course availability with campus Counselor.
- SBISD partners with Project Lead The Way (PLTW) for course design, curriculum and teacher professional development

Certification Available:

AutoDesk Inventor

Education and Training Pathway

Earn the Public Services endorsement by completing four credits within the CTE Education and Training cluster including one advanced course, as noted by **(ADV)**.

Human Growth and Development

Course ID: CET11 A&B/13014300
Credit: 1.0

Explore the stages of human life – prenatal, infancy, childhood, adolescence, adulthood; including biological, psychological and social changes of each stage. Explore theories of development, genetics, birth and the neonate, cognitive and brain development, early experience, attachment, motor and language development, social, moral development, aging and death.

Instructional Practices in Education (ADV)

Course ID: CET12 A&B/13014400
Credit: 2.0

Expand knowledge through practical experience in classroom and working onsite at a district school. Gain practical experience working beside a certified teacher in kindergarten through middle school.

PR: Completion of Human Growth & Development

Practicum in Education and Training (ADV)

Course ID: CET82 A&B/13014500
Credit: 2.0

Participate in a supervised practical application of early childhood education through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in education and training through planning and directing individualized instruction and group activities and assisting with record keeping of classroom teachers, trainers, paraprofessionals, and educational personnel.

PR: Completion of Instructional Practices in Education

Pathway Notes:

- Pathway available at MHS, NHS, SWHS and SHS. Verify specific course availability with campus Counselor.

Certification Available:

Texas Educational Aide Certificate
First Aid/CPR/AED Certification

Health Science

*Earn the Public Services endorsement by completing four credits within the CTE Health Science Cluster, including one advanced course, as noted by **(ADV)**.*

Health Care Professional Pathway

Course List:

- Medical Terminology
- Principles of Health Science
- Health Science Theory with Clinical **(ADV)**
- Anatomy and Physiology **(ADV)**
- Medical Microbiology **(ADV)** and Pathophysiology **(ADV)**
- Practicum in Health Science **(ADV)**
- Internship

Pharmacy Technician Pathway

Course List:

- Principles of Health Science
- Anatomy and Physiology **(ADV)**
- Health Science Theory (no Clinical) **(ADV)**
- Pharmacology
- Practicum in Pharmacy Technician **(ADV)**

Course Selection Notes:

- Courses vary between home campus and Guthrie Center
- Some courses satisfy Science graduation requirements

Certifications Available in Cluster:

- Certified EKG Technician
- Certified Patient Care Technician
- Phlebotomy Technician
- American Red Cross First Aid/CPR/AED
- Pharmacy Technician (PTCE)
- National Sterile Products (IV) Certification

Health Care Professional Pathway

Earn the Public Services endorsement by completing four credits within the CTE Health Science Cluster, including one advanced course, as noted by (ADV).

Medical Terminology (Optional Recommended Course Offering)

Course ID: CHS11 A&B/
13020300
Credit: 1.0

Develop a working knowledge of the language of medicine by relating terms to body systems, learn to identify proper use of words in a medical environment.

Principles of Health Science

Course ID: CHS10 A&B/
13020200
Credit: 1.0

Learn about the health care industry and how medical professionals work together to apply scientific principles and processes to improve the well-being of patients. Explore therapeutic, diagnostic, health informatics, support services, and other systems used in the healthcare industry.

Health Science Theory w/ Clinical (ADV)

Course ID: CHS12 A&B/
13020410
Credit: 2.0

Study best practices in the health care industry and learn the importance of confidentiality, ethics, and compassion in caring for patients. Observe health care professionals and patients in the hospital for practical application of concepts learned in a simulated lab.

- **PR: Completion of Principles of Health Science and Biology**

Practicum in Health Science or Extended Practicum (ADV)

Course ID: CHS82 A&B/13020500 or CHS82 C&D/13020505
Credit: 2.0 or 3.0

Expand health science knowledge and skills by working as part of a team in a health care setting to gain hands-on experience using the skills learned in previous courses.

- **PR: Completion of Health Science Theory w/ Clinical**

OR

Internship (ADV)

Course ID: CPG81 A&B/12701300
Credit: 2.0

Participate in a learning experience that combines classroom instruction with paid employment in the healthcare industry.

- **PR: Completion of Health Science Theory w/ Clinical**

Additional Course Offerings in Pathway:

Medical Microbiology * (ADV) AND Pathophysiology * (ADV)

Course IDs: CTHS71/13020700 (1st Semester) & CTHS72/13020800 (2nd semester)
Credit: 2.0 (1.0 + 1.0)

Identify the relationships of microorganisms to wellness and disease and learn how to prevent diseases by understanding the chain of infection, asepsis, and standard precautions. Investigate the differences between pathogenic and nonpathogenic organisms and how they relate to specific diseases, causative agents, and treatment options of diseases.

Learn how the disease processes affect the human body systems with prevention and treatment of diseases. Observe the differences between normal and abnormal physiology in a lab setting.

- **Must be taken concurrently**
- **PR: two years of science**

Anatomy and Physiology * (ADV)

Course ID: CHS70 A&B/13020600
Credit: 1.0

Discover the structures and functions of the human body and body systems, and investigate the body's responses to forces, maintenance of homeostasis, electrical interactions, transport systems, and energy processes.

- **PR: two years of science**

Pathway Notes:

- * Satisfies a high school Science graduation requirement and may be taken anytime in the course sequence.
- Pathway available at MHS, NHS, SWHS, and SHS. Verify specific course availability with campus Counselor.
- Students who have completed Health Science Theory with Clinical at their home campus may request participation in Practicum in Pharmacy Technician at Guthrie.

Certification Available:

- Certified EKG Technician
- Certified Patient Care Technician
- Phlebotomy Technician
- American Red Cross First Aid/CPR/AED

Pharmacy Technician Pathway (Guthrie)

Earn the Public Services endorsement by completing four credits within the CTE Health Science Cluster, including one advanced course, as noted by (ADV).

Principles of Health Science

Course ID: CHS10 A&B/13020200
Credit: 1.0

Learn about the health care industry and how medical professionals work together to apply scientific principles and processes to improve the well-being of patients. Explore therapeutic, diagnostic, health informatics, support services, and other systems used in the healthcare industry.

- **Taken at Home Campus**



Health Science Theory (ADV) and Pharmacology (no Clinical)

Course ID: CTHS12/13020400 & CTHS22/13020950
Credit: 2.0 (1.0 + 1.0)

Health Science Theory includes an overview of health care safety practices and government regulations, pharmacy-related medical terminology, standards of infection control, and ethical/legal issues in healthcare.

Pharmacology studies how natural and synthetic chemical agents such as prescription drugs affect biological systems. Knowledge of the properties of therapeutic agents is vital in providing quality health care. Treatment options are ever changing and must be studied continually.

- **PR: Completion of Principles of Health Science and Biology and Chemistry**
- **Must be taken concurrently**



Practicum in Pharmacy Technician (ADV)

Course ID: CHS92 A&B/13020500
Credit: 2.0

Participate in a supervised practical application of pharmacy tech through classroom learning and a paid or unpaid work experience. Acquire employability skills and experience for pursuit of career opportunities in a pharmacy.

- **PR: Completion of Health Science Theory/no Clinical and Pharmacology or Health Science Theory w/Clinical; and Biology**

Pathway Notes:

- * Satisfies a high school Science graduation requirement
- Students who have completed Health Science Theory with Clinical at their home campus may request participation in Practicum in Pharmacy Technician at Guthrie.
- Students are responsible for Texas State Board of Pharmacy Registration fees
- Principles of Health Science may be waived for students at WAIS
- Additional Health Science courses can be taken at home campus; Medical Terminology, Anatomy and Physiology*, Medical Microbiology* and Pathophysiology*

Certification Available:

- American Red Cross First Aid/CPR/AED
- Certified Pharmacy Technician (CPhT)
- National Sterile Products (IV) Certification

Cosmetology Pathway (Guthrie)

Earn the Public Services endorsement by completing four credits within the CTE Human Services Cluster, including one advanced course, as noted by **(ADV)**.

Cosmetology I with Lab

Course ID: CHU19 A&B/13025210
Credit: 3.0

Learn about hair care, nail care, skin care, and sterilization and sanitation procedures related to operating in a salon. Explore cosmetology through hands-on training, interaction with guest artists, salon visits and a self-paced curriculum aligned to the Texas Cosmetology State Examination.



Cosmetology II with Lab **(ADV)**

Course ID: CHU29 A&B/13025310
Credit: 3.0

Maximize skills and theory learned in Cosmetology I through an intense focus on industry readiness and the Texas Cosmetology State Licensing Examination.

Upon successful completion of Cosmetology II, high school graduates are prepared to sit for the Texas Cosmetology Operator License exam.

- **PR: Completion of Cosmetology 1, nine week modules and clock hours**

Pathway Notes:

- Students are responsible for Texas Department Licensing Registration fee and supplies.

Certification Available:

State of Texas Cosmetology Operators License

Early Childhood Pathway

Earn the Public Services endorsement by completing four credits within the CTE Human Services Cluster including one advanced course, as noted by **(ADV)**.

Principles of Human Services

Course ID: CHU10 A&B/
13024200
Credit: 1.0

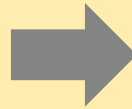
Gain an introduction to nutrition, early child development, family and community development, personal care and consumerism. Explore each of these topics through hands-on lab activities to prepare for courses in pathway.



Child Development

Course ID: CHU15
A&B/13024700
Credit: 1.0

Develop knowledge and skills to function effectively in the role of a parent or caregiver including parental responsibilities, child guidance techniques, and parents as positive role models.



Human Growth and Development

Course ID: CET11
A&B/13014300
Credit: 1.0

Explore the stages of human life – prenatal, infancy, childhood, adolescence, adulthood; including biological, psychological and social changes of each stage. Explore theories of development, genetics, birth and the neonate, cognitive and brain development, early experience, attachment, motor and language development, social, moral development, aging and death.



Child Guidance (ADV)

Course ID: CHU16 A&B/
13024800
Credit: 2.0

Expand knowledge through practical experience in classroom and working onsite at a district pre-kindergarten center. Students work in PreK classes with 4 and 5 year old students to assisting teachers in classroom lessons and routines.

Pathway Notes:

- Pathway available at NHS, SWHS and SHS. Verify specific course availability with campus Counselor.

Certification Available:

Texas Educational Aide Certificate
First Aid/CPR/AED Certification

Law and Criminal Justice Pathway (Guthrie)

Earn the Public Services endorsement by completing four credits within the Law Cluster, including one advanced course, as noted by (ADV).

Law Enforcement I AND Court Systems and Practices

Course ID: CTLW11/13029300 & CTLW12/13029600

Credit: 2.0 (1.0 + 1.0)

Explore the history, organization, and function of local, state, and federal law enforcement including Constitutional law, the U.S. legal system, criminal law, law enforcement terminology and methods, and the classification and elements of crimes.

Gain an overview of the federal and state court systems with emphasis on Constitutional law for criminal procedures, as well as civil law. Participate in preparation and delivery of both prosecution and defense legal strategies in a classroom and courtroom environment.

- **Must be taken consecutively in one school year**

Law Enforcement II (ADV) AND Criminal Investigation

Course ID: CTLW21/13029400 & CTLW22/13029550

Credit: 2.0 (1.0 + 1.0)

Learn the day-to-day challenges faced in protecting and serving people including ethical and legal responsibilities, operation of police and emergency telecommunication equipment, and courtroom testimony.

Explore the investigations including terminology, investigative procedures in crime scene processing, evidence collection, fingerprinting, and courtroom presentation. Participate in case studies and simulated crime scenes to collect and analyze evidence.

- **Must be taken consecutively in one school year**
- **PR: Completion of Law Enforcement I**

Forensic Science * (ADV)

Course ID: CTLW50/13029500

Credit: 1.0

Explore the application of science to connect a violation of law to a specific criminal, criminal act, or behavior and victim. Learn terminology and procedures related to the search and examination of physical evidence in criminal cases as performed in a typical crime laboratory. Use scientific methods to collect and analyze evidence to draw conclusions in simulated cases.

Recommended PR: Completion of Law Enforcement I and Court Systems & Practices

PR: Completion of Biology and Chemistry

Pathway Notes:

- * Satisfies a high school Science graduation requirement

Certification Available:

Precinct Five Teen Police Academy Certificate of Completion

NJROTC Pathway (Guthrie)

Earn the Public Services endorsement by completing four JROTC courses.

The Navy Junior Reserve Officer Training Corps is a unique program, facilitated by senior Navy retired instructors, providing real hands-on leadership and management opportunities unlike any other high school program. NJROTC instills the pride of community service and good citizenship. A first year cadet can expect to be leading a squad by the completion of the first year and eligible to command the entire company of cadets by his/her senior year.

Cadets plan, schedule, organize and execute a myriad of program activities to include local, regional and national competitive team activities including drill, marksmanship, physical fitness, orienteering (land navigation) and academics. The Spring Branch Navy JROTC unit has earned national academic honors for the past 13 years.

The Navy provides all books, equipment and uniforms at no cost to students participating in the JROTC program. There is no military obligation to participate in the program. However, cadets completing two years of NJROTC who choose to enlist earn a rate increase of one pay grade upon completion of boot camp and cadets completing three years advance two pay grades, resulting in a significant increase in basic pay. Additional educational opportunities exist through attendance at any of the service academies such as the Naval Academy or through Navy ROTC scholarships.

Naval Science I AND Foundations of Personal Fitness *

Course ID: NS102 A&B/03160100 &
HPI34 A&B/03820101
Credit: 2.0 (1.0 + 1.0)

Course includes 6 units: Intro to NJROTC, Leadership Skills, Citizenship and Government, the U.S. Navy, Wellness-Fitness-First Aid and Geography and Survival Skills



Naval Science II AND Student Leadership

Course ID: NS202 A&B/03160200
ADNS2A A&B/N1290010
Credit: 2.0 (1.0 + 1.0)

Course includes 3 units: Maritime History, Leadership and Nautical Science which includes Maritime geography, oceanography, meteorology, astronomy and physical science.



Naval Science III

Course ID: NS302 A&B/03160300
Credit: 2.0

Course covers 3 units: Naval Knowledge (Seapower and national security, naval operations, military and international law), Leadership and Naval Skills (ship construction, damage control, basic seamanship and marine navigation)



Naval Science IV

Course ID: NS402 A&B/03160400
Credit: 2.0

The purpose of this course is to build on the basic qualities of a good follower and an effective leader provided in Naval Science 1-3 and to take a more in-depth look at what leadership is, and how to maximize your abilities in the leadership area

Pathway Notes:

- * Satisfies a high school PE graduation requirement

Certification Available:

American Red Cross First Aid/CPR
Certificate of Completion