

ATS

Jefferson College

AREA TECHNICAL SCHOOL

RIGOROUS, RELEVANT, RESILIENT



CAREER GUIDE

CLASSES OF 2023, 2024, 2025



ATS
AREA TECHNICAL SCHOOL

Welcome!



1000 Viking Dr.
 Hillsboro, MO 63050
 (636) 481-3498
www.jeffco.edu/ATS

TABLE OF CONTENTS

Requirements for Levels of Certification	5
ATS College Credit Summary	6
Applied Academics Enrollment	8
Applied Communication.	9
Applied Mathematics	10
Automotive Technology	11
Biomedical Sciences	12
Building Repair Technology	15
Culinary Arts	16
Digital Media Technology.	18
Early Childhood Education	19
Emergency Medical Technician.	20
Fire Science Technology	21
Health Services I	23
Health Services II	27
Heating, Refrigeration & Air Conditioning Technology.	29
Metal Fabrication.	30
Precision Machining Technology	32
Residential Carpentry	33
Advanced Residential Carpentry.	34
Welding Technology	35

Updated 7.2.24

CAREER EDUCATION PROGRAMS

Students enrolled in career and academic programs at the Area Technical School receive high school credit from their sending high school. Students enrolled in a college-level program earn dual or articulated credit. These students earn high school credit through their sending high school and college credit is granted for each career program designated as dual or articulated credit. The number of college credits earned varies based on the career and technical education program.



NON-DISCRIMINATION POLICY

It is the policy of Jefferson College that no person shall, on the basis of age, ancestry, color, creed, disability, genetic information, marital status, national origin, race, religion, sex, gender identity or expression, sexual orientation, or veteran status, be subject to discrimination in employment or in admission to any educational program or activity of the College. Note: If accessibility services are needed, contact the Accessibility Resource Office, ASII Room 303, (636) 481-3158 or aro@jeffco.edu. (7 days advance notice required for sign language interpretation services).

In compliance with Federal Rules and Regulations, Jefferson College has adopted a procedure for resolving complaints of discrimination. The procedure is available to any Jefferson College student, employee, or applicant who feels they have been discriminated against in employment, student programs, or student activities. For matters involving sexual harassment, please refer to the Jefferson College Title IX Sexual Harassment Procedure and Grievance Process for students and employees.

- The Americans with Disabilities Act Amendments Act (ADAAA) Coordinator for students is the Accessibility Resource Office Coordinator, Office — ASII Room 303, (636)481-3158.
- The College Coordinator of Title IX is Dr. Kimberly Harvey-Manus — Student Center 205, kharvey@jeffco.edu, (636)481-3200. The College Coordinator of Title IX is responsible for any alleged discrimination or harassment that relates to sex or gender, including, but not limited to sexual harassment, sexual discrimination and sexual misconduct complaints.
- Students with concerns regarding any alleged discriminatory act or occurrence falling within the provisions of any of the Federal Rules and Regulations other than Title IX or ADAAA as specified above may contact Dr. Kimberly Harvey-Manus — Student Center 205, kharvey@jeffco.edu, (636)481-3200.
- Employees, applicants, or other individuals with concerns regarding any alleged discriminatory act or occurrence falling within the provisions of any of the Federal Rules and Regulations other than Title IX or ADAAA as specified above may contact the Director of Human Resources, Office — Administration 133-E, (636)481-3157.

Reports may be made in person, verbally, by phone, in writing through mail or electronic mail, through the College's [Maxient reporting portal](#) (found in MyJeffco or at <https://www.jeffco.edu/non-discrimination-policy>), or any other manner that delivers the information to the appropriate Coordinator at any time.



REQUIREMENTS FOR LEVELS OF CERTIFICATION

Certificate of Mastery

To receive a Certificate of Mastery, students will successfully demonstrate positive behavior, appropriate work skills and attitudes, knowledge/skills of the technical program, and must meet the following criteria:

1. Student will master 90% or more of the competencies.
2. Student will have at least a 3.5 GPA in the technical program.
3. Student will have attendance of 90% or better at the completion of their program.

Certificate of Completion

To receive a Certificate of Completion, students will successfully demonstrate positive behavior, appropriate work skills and attitudes, knowledge/skills of the technical program, and must meet the following criteria:

1. Student will master 80% or more of the competencies.
2. Student will have at least a 2.5 GPA in the technical program.
3. Student will have attendance of 80% or better at the completion of their program.

Certificate of Participation

To receive a Certificate of Participation, students will successfully demonstrate positive behavior, appropriate work skills and attitudes, knowledge/skills of the technical program, and must meet the following criteria:

1. Student will master 70% or more of the competencies.
2. Student will have at least a 2.0 GPA in the technical program.
3. Student will have attendance of 70% or better at the completion of their program.

ATS College Credit Summary

YR When Credit Transcribed	Jefferson College Course Number	Course Title	Credit Hours
Automotive Technology (AUT)			
Seniors Only	AUT 100	Automotive Shop Safety	3
	AUT 131	Automotive Brake Systems	3
	AUT 132	Automotive Brake Systems Lab	4
	AUT 141	Automotive Steering and Suspension Systems	3
	AUT 142	Automotive Steering and Suspension Systems Lab	3
			13

Biomedical Sciences (BMS)			
YR 2 & YR 3	COL 100	Freshman Seminar	1
	HIT 122	Medical Terminology	3
	CIS 125	Computer Concepts and Applications	3
			7

Culinary Arts (CUL)			
YR 1	CUL 101	Culinary Arts I	4
	CUL 102	Culinary Arts II	4
YR 2	CUL 103	Culinary Arts III	4
	CUL 104	Culinary Arts IV	4
YR 3	CUL 100	ServSafe	1
	CUL 210	Hospitality and Restaurant Management	2
	CUL 211	Cost Control	2
			21

Digital Media Technology (DMT)			
YR 1	CIS 135	Intro. to Photoshop CS	3
	CIS 235	Advanced Photoshop & Illustrator	3
YR 2	CIS 125	Computer Concepts and Applications	3
	CIS 165	Programming for the Web	3
	CIS 129	Programming Logic	3
			15

Early Childhood and Elementary Education (ECE)			
YR 1	ECE 102	Intro. To Early Childhood Education	4
	EDU 105	Exploring the Field of Education	1
	ECE 201	Early Childhood Education Lab	2
YR 2	ECE 103	Childhood Health, Nutrition, and Safety	3
	ECE 212	Family, School, and Community Relations	3
	ECE 202	Early Childhood Education Practicum I	2
	ECE 205	Early Childhood Education Practicum II	2
			17

Emergency Medical Technician (EMT)			
Seniors Only	EMT 110	Emergency Medical Technician I	4
	COL 100	Freshman Seminar	1
	EMT 120	Emergency Medical Technician II	4
	EMT 125	Emergency Medical Technician Clinical/Internship I	1
	BIO 126	Anatomy & Physiology for Pre-Hospital Healthcare	3
	ENG 101	English Composition I	3
			16

Fire Science Technology (FST)			
Seniors Only	FST 101	Intro. to Fire Service	3
	FST 110	Fire Fighter I and II	8
	FST 116	Hazardous Materials Awareness & Operations	2
	HPE 132	First Aid and CPR	3
			15

Health Services II (HLT II/PCT)			
Seniors Only	COL 100	Freshman Seminar	1
	HIT 122	Medical Terminology	3
	CIS 125	Computer Concepts and Applications	3
			7

Heating, Refrigeration & AC Technology (HRA)			
YR 1	HRA 105	Principles of Refrigeration	5
	HRA 101	Electricity for HVAC	5
	HRA 160	Sheet Metal Design Sizing Install	3
	HRA 145	Piping & Design	3
YR 2	HRA 125	Refrigeration Mechanical Systems	5
	HRA 150	Customer Relations & Record Keeping	2
	HRA 216	Residential Air Conditioning Systems	3
	HRA 205	Gas Heat	4
			30

Precision Machining Technology (PMT)			
Seniors, Semester 2 Only	PMT 105	Introduction to Machining Procedures	3
	PMT 125	CNC Programming I	3
			6

Welding Technology (WLD)			
YR 1	WLD 141	Gas & Beginning Arc Welding	5
	WLD 142	Advanced Arc Welding	5
YR 2	WLD 244	Gas Tungsten Arc Welding (TIG)	5
	WLD 243	Gas Metal Arc Welding (MIG)	5
			20

Applied Academics Enrollment

All first-year students enrolled in Culinary Arts, Building Repair Technology, Health Services I, Metal Fabrication, and Residential Carpentry will also be enrolled in Applied Communications as well as Applied Mathematics. The Applied Academics courses help students prepare for success at the ATS and beyond.

Applied Mathematics is a one-year course for students enrolled in Health Services and Residential Carpentry. Mathematical content and skills are taught alongside technical expertise to synergize student learning.

Applied Communications is an integrated two-year program of study in Culinary Arts, Building Repair Technology, and Metal Fabrication designed to reinforce and expand upon essential communication skills (written/computer generated, verbal, aural, etc.) required to successfully obtain and retain employment in their respective industry. Second-year students write technical manuals, create digital resumes using platforms such as LinkedIn, and gain skills in creating industry specific documents. As a component of Applied Communications, students in Building Repair Technology, Culinary Arts II, Health Services, Metal Fabrication, and Residential Carpentry earn their OSHA 10-hour card.

Students who enroll in Culinary Arts, Building Repair Technology, Health Services, Metal Fabrication, and Residential Carpentry and enter with a strong English or mathematical background (review of transcripts by instructor and/or counselor recommendation) may be eligible for college-level English or Mathematics placement testing. If the student were to receive a score allowing him or her to place in college-credit bearing courses, the student would be encouraged to enroll in an online course through Jefferson College. This student would remain with the cohort, attending Applied Mathematics or Applied Communications for academic support, but would work on college course materials.

Both courses prepare for and administer the ACT WorkKeys assessments so that students (ages 18+) may earn a National Career Readiness Certificate (NCRC). Across the nation, thousands of employers recognize the value of this credential. Locally, over 900 employers in the St. Louis region use the WorkKeys assessments as screening for employment, as part of a training/apprenticeship program, or for promotion/advancement. Some colleges even use WorkKeys scores for placement within programs.

Several sending schools assign high-school credit for Math or English for each successfully completed semester of Applied courses. For a student to progress through their technical program, students must earn passing grades in their Applied Academics courses. The technical and applied instructors team may decide to make an exception based upon extenuating circumstances.

APPLIED COMMUNICATION

REQUIRED FOR ALL FIRST-YEAR STUDENTS IN THE FOLLOWING PROGRAMS:

Building Repair Technology, Culinary Arts, Metal Fabrication, Health Services I, Residential Carpentry

REQUIRED FOR ALL SECOND-YEAR STUDENTS IN THE FOLLOWING PROGRAMS:

Building Repair Technology, Culinary Arts, Metal Fabrication

The Applied Communication classes support students in reading, writing, and speaking skills needed for success in the technical programs. Students learn the technical terminology used in their programs and develop the reading-comprehension strategies needed to utilize complex texts in technical subjects. Applying a process approach to writing, they research and write summaries and reports on topics in the technical area of study. Students use current technology to orally present technical information, both individually and collaboratively. They also learn job-search skills, create their own résumés and cover letters, and practice interview skills.

Specific objectives in Applied Communication include the following:

- Utilize the writing process in creating research-based papers on topics in the technical area
- Write clear directions for processes related to the technical program
- Demonstrate knowledge of technical terminology within the program
- Develop the reading skills needed to comprehend and utilize textbooks in technical areas
- Demonstrate oral presentation and demonstration skills
- Create a job-search portfolio including a résumé, references page, and cover letter
- Create a professional profile on LinkedIn
- Create an online professional portfolio
- Practice job-interview skills
- Write professional business memos and letters
- Develop interpersonal communication skills while learning to work as part of a team
- Evaluate and develop a personal work ethic
- Practice test-taking skills for success in the technical program and in preparation for placement and/or exit exams
- Demonstrate knowledge of the specialized vocabulary required within the technical field.

Students also earn an OSHA 10-hour card, a highly valued national safety certification, through an online training program.

Many of the sending schools give English Language Arts credit for students in Applied Communication. Working within the context of their technical areas, students simultaneously develop skills needed for mastery in the English Language Arts anchors of the CTE Literacy Goals and Missouri Learning Standards:

- Language
- Writing
- Speaking and Listening
- Reading for Information
- Reading in Science and Technical Subjects

Students also participate in WorkKeys assessments, which measure a range of both hard and soft skills relevant to any occupation, at any level, across industries. Across the nation, tens of thousands of employers recognize the value of this credential: the National Career Readiness Certificate. Locally, WorkKeys assessments are used by over 400 employers in the St. Louis region as screening for employment, as part of a training/apprenticeship program, and for promotion/advancement.

Note: See your program's Schedule of Classes for Applied Communication days.

APPLIED MATHEMATICS

INCLUDED AS PART OF THE FOLLOWING PROGRAMS:

Building Repair Technology, Metal Fabrication, and Residential Carpentry.

You will attend Applied Mathematics two days out of each week you are at the ATS.

Applied Mathematics supports students in mastering math skills needed for success in their technical programs and in the workplace. The class also fosters growth in the “soft skills” needed for success in the workplace. Content and instruction help prepare students for taking the ACT’s WorkKeys Applied Mathematics assessment. Technology is used throughout to enhance student learning and prepare students for situations they may encounter in the workplace.

Topics covered in all programs include: using a tape measure/ruler; changing forms of numbers; working with fractions; converting within and/or between systems of measurement; calculating perimeter and area, and working with ratios, proportions, and percentages. Specific topics covered in individual programs are listed below.

Building Repair Technology:

- Measuring in the metric system
- Working with angles and shapes
- Calculating volume
- Using Ohm’s Law

Metal Fabrication:

- Developing a measurement sense
- Operating with tolerance and kerf
- Using measurement tools such as pressure gauges, calipers, and/or micrometers
- Operating with linear measurements
- Working with angles
- Using right angle trigonometry
- Interpreting blueprints
- Completing takeoffs and estimating

Residential Carpentry:

- Interpreting blueprints
- Operating with linear measurements
- Determining “squareness”
- Exploring 3D modeling
- Calculating volume
- Completing takeoffs and estimating
- Using measurement tools such as stair knocks, speed square, builders square, and/or compass.
- Performing stair calculations

Your high school may give mathematics credit for Applied Mathematics. Check with your counselor. Working within the context of their technical areas, students simultaneously develop skills needed for mastery of the Missouri Learning Standards.

AUTOMOTIVE TECHNOLOGY

**(12TH GRADE)
A.M. ONLY**

Automotive Technicians most often inspect, maintain, and repair cars and light trucks. The instruction in Automotive Technology begins with Automotive Shop Safety. In this course the student will complete an online curriculum plus jack and properly support vehicles. In addition, the student will use twin post frame contact lifts and runway ramp style lifts with swing arm jacks. The proper use of bench grinders, battery chargers, power tools and power shop washers will be covered as they pertain to automotive shop.

In the fall semester, after successful completion of Automotive Shop Safety, the student will study Automotive Brake Systems and Automotive Brake Systems Lab concurrently. In the theory class, the student will learn about automotive brake hydraulic system theory, drum and disc theory, machining (both on the car and off the car), power booster theory, wheel and axle bearing theory and finally Antilock Brake Systems (ABS). The lab portion will be spent in the shop to replace lines and hoses, replace the master cylinder, bleed brakes, overhaul drum and disc brakes, service tapered roller wheel bearings and replace hub-type bearings and perform ABS repairs.

In the spring semester, after successful completion of Automotive Brake Systems, the student will study Automotive Steering and Suspension Systems and Automotive Steering and Suspension Systems Lab concurrently. In the theory class, the student will learn about automotive suspension system types as they apply to vehicles. Rear suspensions will be covered as well. The student will learn about frame types, suspension springs, shocks and struts, ball joints and bushings. The lab portion will cover both testing and replacement of these components. Tires and tire pressure monitoring systems (TPMS) will be covered as well. The student will also learn about the different types of steering gears (Recirculating Ball and Rack and Pinion) and how to service these systems. Both the theory courses and lab courses will cover four wheel adjustable alignments and resetting the steering system Electronic Control Unit (ECU) with the Hunter CodeLink tool.

After successful completion of Automotive Steering and Suspension Systems in the spring the student will take “bridging” classes (Automotive Engine Repair and Automotive Engine Repair Lab also Automotive Engine Performance and Automotive Engine Performance Lab) in the early summer to allow the student to step into the second year in the fall semester with other college students.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required.

Recommended High School Classes:

Applied/General Mathematics Algebra/Geometry, General Shop, Physical Science

These classes are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tool/Supply Requirement:

The student is required to purchase a pair of clear safety glasses and two Jefferson College Automotive shirts available in the Bookstore on the Hillsboro campus. Phone orders accepted; (636) 481-3290. Student will also need a pair of shop shoes/street shoes (no tennis shoes).

BIOMEDICAL SCIENCES PROGRAM

**(10, 11 & 12TH GRADES)
A.M. & P.M.**

Project Lead The Way (PLTW) is the leading provider of rigorous and innovative STEM (science, technology, engineering and math) education curricular programs used in schools. PLTW exists to prepare students for the global economy through its world-class curriculum. PLTW's comprehensive curriculum has been collaboratively designed to promote critical thinking, creativity, innovation, and real-world problem solving skills in students. The hands-on, project-based program engages students on multiple levels, exposes them to areas of study that they typically do not pursue, and provides them with a foundation and proven path to college and career success.

The Project Lead the Way Biomedical Sciences Program is a sequence of courses which follows proven, hands-on, real-world problem-solving approach to learning. Students explore the concepts of human medicine and are introduced to bioinformatics, including mapping and analyzing DNA. Through activities, like dissecting a heart, students examine the processes, structures and interactions of the human body – often playing the role of biomedical professionals to solve mysteries. Think CSI meets ER. They also explore the prevention, diagnosis and treatment of disease working collaboratively to investigate and design innovative solutions for the health challenges of the 21st century such as fighting cancer with nanotechnology.

Throughout the Biomedical Sciences program, students acquire strong teamwork and communication practices, and develop organizational, critical-thinking, and problem-solving skills. Along the way students investigate a variety of careers in biomedical sciences.

Biomedical Sciences courses complement traditional science courses. It is the expectation of the PLTW Biomedical Sciences program that students concurrently enroll in college preparatory math and science courses at their home high schools. The program is designed to prepare students to pursue a post-secondary education and careers in the biomedical sciences.

YEAR 1 COURSES

Principles of the Biomedical Sciences (PBS)

This course provides an introduction to the biomedical sciences through exciting hands-on projects and problems. Students investigate concepts of biology and medicine as they explore health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They will determine the factors that led to the death of a fictional woman as they sequentially piece together evidence found in her medical history and her autopsy report. Students will investigate lifestyle choices and medical treatments that might have prolonged the woman's life and demonstrate how the development of disease is related to changes in human body systems. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes and allow students to design experiments to solve problems. Key biological concepts including maintenance of homeostasis in the body, metabolism, inheritance of traits, and defense against disease are embedded in the curriculum. This course is designed to provide an overview of all the courses in the biomedical sciences program and lay the scientific foundation for subsequent courses.

Human Body Systems (HBS)

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases and often play the roles of biomedical professionals to solve medical mysteries.

YEAR 2 COURSES

Medical Interventions (MI)

In the Medical Interventions course, students will investigate the variety of interventions involved in the prevention, diagnosis and treatment of disease as they follow the lives of a fictitious family. A “How-To” manual for maintaining overall health and homeostasis in the body, the course will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose and treat cancer, and how to prevail when the organs of the body begin to fail. Through these scenarios, students will be exposed to the wide range of interventions related to Immunology, Surgery, Genetics, Pharmacology, Medical Devices, and Diagnostics. Each family case scenario will introduce multiple types of interventions and will reinforce concepts learned in the previous two courses, as well as present new content. Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions will be showcased across the generations of the family and will provide a look at the past, present and future of biomedical science. Lifestyle choices and preventive measures are emphasized throughout the course as well as the important role scientific thinking and engineering design play in the development of interventions of the future.

Biomedical Innovation (BI)

In this capstone course, students apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences. Students design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician’s office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community.

The student must be enrolled as a junior or senior in high school. Students enrolling in this program should also be enrolled in appropriate college-prep science and math courses at their home high schools. The ideal student for this program is a motivated, college-bound individual who is willing to tackle the challenge of college-level work at an accelerated pace. Students should possess strong communication skills, be able to work independently and be able to work as a member of a team to achieve the course objectives. Students are expected to have a positive attitude, maintain good attendance throughout the school year, and conduct themselves in a professional manner.

Instruction will involve both classroom and laboratory experiences with home study required. Students will need regular access to a computer with internet access in order to complete assignments – this may be at home, public library, school media center, or other public facility.

Recommended High School Courses:

Biology Chemistry, College Prep Math Courses,
Proficient Computer Skills (Typing, Microsoft Word, Microsoft PowerPoint, Internet Research)

These are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Instructional Materials Requirement:

Students will be responsible for purchasing a lab notebook for each semester. All Biomedical Sciences students will register as members of HOSA (Future Health Professionals), a student-run organization. Dues are \$20.00. Students will also need general supplies such as: three-ring binders, paper, pen, pencils, and a flash drive. Total estimated cost is \$40.00.

College Credit Opportunity for PLTW Biomedical Sciences <http://pltw.mst.edu/undergradcredit/undergradcredit/>

Students may receive undergraduate credit from the Missouri University of Science and Technology for successfully completing any of the PLTW Biomedical Sciences courses. Students must have taken the PLTW at a certified PLTW school and received an A or B in the class AND earn a 6 or higher on the End of Course Assessment. Credit will be awarded for the first year biology electives in the S&T curriculum listed below. Each course is 3 credits. The fee is \$250/course. The college credit is optional and is not a requirement to participate in the program.

Students may choose to apply for college credit at the completion of each course or may wait until graduation. The application from Missouri S&T requires that the high school transcript state the name (or abbreviation) for the course.

PLTW Course MO S&T Course Credits		
Principles of the Biomedical Sciences (PBS)	BIO SCI 1943: Introduction to Human Anatomy & Physiology I (A&PI)	3
Human Body Systems (HBS)	BIO SCI 1953: Introduction to Human Anatomy & Physiology II (A&PII)	3
Medical Interventions (MI)	BIO SCI 1982: Introduction to Biomedical Problems (BP)	3
Biomedical Innovation (BI)	BIO SCI 1983: Introduction to Biological Innovation (BI)	3

BUILDING REPAIR TECHNOLOGY

**(10, 11, & 12TH GRADES)
A.M. & P.M.**

The Building Repair Technology program prepares students to be skilled building repair technicians. Students are provided experience in assembly, installation, maintenance, and repair of systems within residential and commercial buildings. Classroom and laboratory instruction include opportunities for students to work with metals, wood, stone, brick, glass, concrete, and composition substances. The student will also learn installation and repair of various mechanical and electrical systems and the proper use of a variety of hand and power tools as well as how to read blueprints and follow technical specifications. Students will also receive the opportunity to learn various welding techniques.

Successful completion of the program may lead to various types of skilled employment in such careers as building maintenance worker, building service mechanic, carpenter, plumber, electrician, and painter. The training experience may also be used as preparation for additional technical education in various college level programs.

Students must be enrolled as a high school sophomore, junior, or senior. The student must have a basic understanding of the following mathematical concepts: addition, subtraction, multiplication, and division. The student should understand and be functional in these concepts as they pertain to whole numbers, fractions, and decimals.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required.

Recommended High School Courses:

General Shop, Applied Math, Career Exploration, Woodworking

These courses are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tool/Supply Requirement: Safety Glasses, daily school supplies (paper, notebook, etc.)

CULINARY ARTS

**(10, 11, & 12TH GRADES)
A.M. & P.M.**

This course is designed for the student who wishes to learn the culinary arts and prepare for a career in food preparation in a hotel, club, or restaurant environment. With an emphasis placed on the fundamentals of the culinary arts, the student will also learn the fundamentals of restaurant and banquet service.

Areas of study include kitchen safety, sanitation, baking and pastry, purchasing and receiving, cost control, supervisory development, meat fabrication, soups, stocks and sauces, international cuisine, and menu design. Students will also be eligible to receive sanitation certification from the National Restaurant Association. During the third year of study, students will take college level Culinary Arts.

Instruction stresses quality food preparation techniques and creative food presentation styles. The skills learned in this class, if not utilized as a career choice, will be beneficial throughout life when planning family meals.

Students who successfully complete the program may find skilled careers as a line cook, prep cook, server, server assistant, or host/hostess. This program is an excellent jump start for a postsecondary culinary arts education.

COURSE OBJECTIVES:

- To develop a working knowledge of the basic principles of the culinary arts.
- To develop safe work habits in utilizing the tools and equipment of the trade.
- To develop sanitary work habits for use in the lab and throughout the student's career.
- To develop a sense of pride in workmanship of the foods created.
- To develop an understanding of food science.
- To develop a working knowledge of nutrition and dietary needs.

COURSE TOPICS:

- Safety in the workplace
- Food service sanitation
- Basic kitchen terminology
- Weights, measures, and conversions
- Equipment identification
- Creativity in presentation
- Baking and pastries
- Breakfast preparation
- Product identification and preparation
- Entree preparation
- Vegetable and starch preparation
- International cuisine
- Meat, poultry and seafood fabrication
- Soups, stocks, and sauces
- Beverage preparation and service
- Table service
- Appetizers, hors d'oeuvres, and canapés
- Salads and sandwiches
- Banquet organization and preparation
- Restaurant and cost control
- Nutrition and diet therapy
- Purchasing and receiving
- Supervisory development

The student must be enrolled as a high school sophomore, junior, or senior. The student must have a basic understanding of the following mathematical concepts: addition, subtraction, multiplication, and division. The student should understand and be functional in these concepts as they pertain to whole numbers, fractions, and decimals.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required.

RECOMMENDED HIGH SCHOOL COURSES:

Family and Consumer Sciences, Applied Math through Algebra, Art Fundamentals

These courses are not established as prerequisites. Students that have been successful in these courses have historically demonstrated a higher degree of success in this career education program.

ESTIMATED INSTRUCTIONAL MATERIALS REQUIREMENT:

- Blue or black ink pen
- Loose leaf paper
- 3-ring binder Textbook (provided)
- Culinary Arts uniform (2 jackets, 1 chef pants, 2 aprons, 1 hat)
- Hepatitis A vaccinations (series of 2 shots) available through your doctor
- SkillsUSA membership dues (\$25.00)

TOTAL ESTIMATED COST: \$110.00

Students will receive a letter during the summer detailing uniform ordering procedures.

(Area Technical School Seniors, who have completed two years of the Culinary Arts Program, along with the recommendation of the ATS Culinary Arts Instructor, have the opportunity to continue their Culinary Arts education after normal ATS hours if their sending school allows them to enroll in the third and fourth semesters of the Jefferson College Culinary Arts late afternoon program. Students will need to provide their own transportation.)

DIGITAL MEDIA TECHNOLOGY

**(10, 11 & 12TH GRADES)
A.M. & P.M.**

The Digital Media Technology Program combines classroom experience with real-world projects; this interdisciplinary program is designed for students seeking employment in information technology careers, including, but not limited to: graphic design, photography, web design, digital media and motion creation, photo manipulation, and drone aviation. Some of the software programs used to gain this experience include: Adobe Photoshop, Adobe Dreamweaver, Adobe Illustrator, and Adobe Premiere.

GRAPHIC DESIGN: Master the skills of design and important techniques in graphic design. Build your skill set learning about color theory, typography, images and many other elements used together to produce creative eye-catching work. Students will learn the Adobe software suite including Photoshop and Illustrator.

PHOTOGRAPHY: Using professional DSLR cameras and lenses, learn the basic concepts and practice of digital photography, including understanding and use of the camera, lenses, and other basic photographic equipment. The course will address aesthetic principles as they relate to composition, space, exposure, light and color.

WEB DESIGN: By learning HTML and CSS you will develop the skills of front-end web design focusing on designing and building websites that are focused on the needs of users, striking a balance between form and function. We will use Adobe Dreamweaver to achieve these goals.

DRONES: Learn to fly and maintain a drone while preparing to enter the fast-growing drone aviation industry. You will learn the basics of flying, with a focus on safety and proper technique. You will learn the proper ways to shoot and edit arial photography and videography. Adobe Premiere and Photoshop will be used for editing .

COMPUTER CONCEPTS & APPLICATIONS: Computer Concepts and Applications prepares students with the skills required to be a successful and responsible member of today's digitally connected society. Concepts include computer software, computer hardware, cloud computing, Internet use, networking, security, and privacy.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required.

Recommended High School Courses:

[Computer Classes](#), [Web Design](#), [Mathematics](#), [Communications](#), [Photo Editing](#)

These are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

EARLY CHILDHOOD EDUCATION

**(11 & 12TH GRADES)
A.M. & P.M.**

This program provides students with the background and professional competencies necessary for employment in the field of early childhood care and elementary education. Instruction includes topics in child health, nutrition and safety, infant/toddler care, and principles of child growth and development. Additional laboratory experiences are provided with direct interaction with young children under qualified supervision in the campus Early Childhood Center or other approved sites within the county. This course of study also may lead to a career in teacher education for students desiring to obtain a teaching certificate from a four-year university. The student must be enrolled as a junior or senior in high school. Articulation agreements with the University of Missouri St. Louis and Missouri Baptist University allow for the high school senior to transfer credits to these institutions towards a Bachelor's degree in Early Childhood Education and/or Elementary Education.

Recommended High School Courses:

Family & Consumer Sciences, Health, Child Development

These are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Course/Materials Requirements:

Students will be required to purchase a minimum of one program shirt to be worn in labs. A student can purchase additional shirts and/or hoodies. The approximate cost of a shirt is \$10.00 and a hoodie is \$16.00. An electronic Missouri Highway Background Check will be required at a cost of \$15.25. Students may be required to complete the fingerprinting at an estimated cost of \$8.50.

EMERGENCY MEDICAL TECHNICIAN

(12TH GRADE)

**MUST BE 18 BY MARCH 15 DURING ACADEMIC YEAR OF ENROLLMENT
1-3 PM @ Jefferson College Arnold**

Emergency Medical Technician personnel are skilled in conducting patient assessments and recognizing the diagnostic signs and symptoms of major injuries and illnesses. They learn to use the ambulance, rescue vehicle, and hospital emergency room equipment to provide high-level emergency medical care and stabilize emergency patients.

Within the training provided for this course are eight credit hours of college-level coursework. Students must qualify for college-level coursework by taking the Accuplacer assessment before program enrollment. The inclusion of this coursework provides a solid foundation of general education courses that will help a student with written communication within the medical field (ENG101), preparing a career pathway (COL100), and expanding understanding of the human body for use in the EMT field (BIO116). These courses will provide the student to be successful in the EMT program. These are also necessary as a prerequisite for the Paramedic program and are a part of the Emergency Medical Technology Degree.

Students will attend two 12-hour shifts at one of our clinical partners in the emergency room. They will also participate in two 12-hour shifts with one of our partners on the ambulance. During these shifts, they will learn the skills necessary to operate as an EMT and have the opportunity to see experienced providers in the field doing the work. Students will also be exposed to some of day to day rigor involved in being a part of this field. Because students must be 18 to participate in ride-along ambulance shifts, students must turn 18 by March 15 during the academic year of enrollment.

Students enrolled in a Career Education Program are expected to conduct themselves professionally. Students must be able to follow instructions and work as team members to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain impeccable attendance throughout the school year.

Estimated Tools/Supply Requirement:

Uniform Shirt	\$50
Hard Toe EMS Boots	\$100-150
Notebook Paper	\$5-15
Index Cards	\$1-5
Black EMS Pants	\$50-100
Plain Black Socks	\$5-15

FIRE SCIENCE TECHNOLOGY

**(12TH GRADE)
A.M. ONLY**

The Fire Science/EMS Technology program introduces students to a career as a full-time or volunteer firefighter.

Firefighter I and II covers fire protection characteristics, fire behavior, types of building construction and the impact of fire on buildings, extinguishing agents used, water supply, fire streams, ground ladders, forcible entry, auto extrication, community risk reduction, and hazardous materials.

Students will be eligible to take the Firefighter I and II State Certification Practical and Written (online) Exams after successful completion of this course and Hazardous Materials Awareness and Operations. This will certify an Individual to the NFPA 1001-2019 Firefighter Professional Qualifications Standard. There are four state certifications that the student is eligible to become certified in - Firefighter 1, Firefighter 2, Hazardous Materials Awareness & Hazardous Materials Operations. The student must pass all four to be able to obtain their certificates.

State Certification for Firefighter I and II is administered through the Missouri Division of Fire Safety at predetermined sites throughout Missouri. Applicants must be 18 years of age and have successfully completed the required coursework. If applicants are not 18 years of age or miss the initial scheduled testing they will have one year from the completion of the course to take the test.

First-Aid/CPR will also be provided during the Firefighter I and II course.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude and maintain good attendance throughout the school year.

Instruction will involve classroom and laboratory experiences, **Saturday practicals**, with home study required.

Recommended High School Courses:

General Science, Biology and Chemistry, Health, Applied Math through Algebra

These are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tools/ Supply Requirement:

Uniform Shirt.	\$50
Polishable Boots/Shoe (black)	\$25-\$75
Notebook Paper	\$5-\$15
Index Cards	\$1-\$5
Plain black socks	\$5-\$15
Fire Gloves	\$56
Nomex Hood.	\$20
Black Ink Pens	
IFSTA Essentials Firefighter 1&2 Manual\$92 (approximate price)

Total Estimated Cost..... \$264 – \$353

IFSTA Essentials Firefighter 1&2 Manual (currently using the 7th edition) – This book will be provided to the student; however, the book must be kept in good shape, and cannot be written in, highlighted, or destroyed. The book must be returned by the end of the second semester (during the last week of ATS). It is recommended that the book is purchased out of pocket, but it is not required. The reason we recommend this is that if a student would fail one of the MO state certified online written exams at the end of the second semester, the student will have another opportunity to take a retest, but it may not happen before ATS ends for the summer. This will give the student an opportunity to study using their own book, before they schedule a retest date. This will be explained further at Welcome Night and Open Houses.

HEALTH SERVICES I

(11 & 12TH GRADES) 16 YEARS OF AGE OR OLDER UPON ENROLLMENT A.M. OR P.M.

Health Services I course is designed to provide specific educational experiences essential for development of skills, knowledge, and attitudes necessary for employment in existing and emerging health occupations. Each student will develop understanding and master skills in basic nursing practice as they apply to the duties of a nurse's aide.

Instruction will include procedures and directions in the following areas: basic hygiene and infection control techniques, bed making, personal care procedures, food service, charting, basic preventative and restorative care, basic observation, safety techniques, basic emergency first aid, uncomplicated nursing procedures, (i.e., recording vital signs, weighing and measuring, etc;), communication and mathematical skills, interpersonal relationships, teamwork, and ethical and legal responsibilities. Students must be at least 16 years of age to participate in this program and have reliable transportation to and from the clinical sites.

During the course, each student will have the opportunity to meet the requirements and pass exams to become certified in both Cardio-Pulmonary Resuscitation (CPR) and as Nursing Assistants.

1. The basic program consists of a minimum of 75 hours of classroom instruction and 100 hours on-the-job clinical practice completed by each student under the supervision of an R.N. or L.P.N. approved by the Department of Health and Senior Services. The supervisor shall provide documentation to the instructor(s) that the one-hundred hours have been completed prior to final testing for state certification purposes.
2. The student must pass a minimum of three (3) written or oral tests throughout the course with a score of eighty (80) percent or better on each test to be eligible to take the final exam, according to the Department of Health and Senior Services, Division of Health Standards and Licensure.
3. The final examination is 75 questions presented by the examiner based on the standardized curriculum and selected from a specific test pool of questions which are safe-guarded under the auspices of the Department of Health and Senior Services. The student must score a minimum of 76% to pass the written or oral exam.
4. The student must also successfully complete up to four (4) procedures under the observation of the examiner. The procedures may include a type of bath, vital signs, transfer techniques, feeding techniques, active or passive range of motion, dressing and grooming, skin care, hand washing, and gloving.
5. All students must successfully pass both a criminal background check and an Office of Inspector General background check as required by the appropriate state agencies. All students will be provided information on how to register online through the Family Care Safety Registry (FCSR) to complete their registration for the background check. Upon successful completion of the online registration, the student will receive a copy of their background verification in the mail. The student will need to provide a copy of this background check to their instructor.

Regular attendance is vital for success in this program.

All requirements, as listed, must be met for state certification.

All students will register as members of HOSA (Future Health Professionals), a student-run organization. Dues are \$20.

Minimum Requirements:

Students must have personal, dependable transportation for all clinical site assignments.

Students are responsible for transportation and related expenses to and from clinical sites.

The student must have a basic understanding of the following mathematical concepts: addition, subtraction, multiplication, and division. The student should understand and be functional in these concepts as they pertain to whole numbers, fractions, and decimals.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Instruction will involve both classroom, clinical, and laboratory experiences along with home study requirements. Students are also required to meet minimum restrictions for lifting.

Recommended High School Courses:

General Science, Health, Applied Math through Algebra, Biology and Chemistry (Recommended for Nursing and Allied Health Careers)

These are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Instructional Materials Requirement:

Students enrolled in the Health Services Assistant Program are required by the Missouri Department of the Division of Health Standards and Licensure to participate in a supervised learning experience in a related health service facility. Since this type of instruction cannot be given on the Jefferson College campus, students enrolled in the program must provide their own transportation when the class meets off campus. Clinical instruction is at a local, long-term health care facility.

Students will be responsible for purchasing items listed on the Health Services Supply List.

HEALTH SERVICES I SUPPLY LIST

STUDENT IS RESPONSIBLE FOR PURCHASING:

- ✓ **Gait Belt for Clinical**
- ✓ **Uniforms for Clinical:** Students will be required to purchase two uniforms for clinical. Uniforms are ordered through a company who comes to the classroom. Cost varies slightly and is paid to the uniform company.) Instructor will provide students with more detailed information in the first week of class. The clinical uniforms are program specific with a logo and the students' first name. A canvas cloth gait belt is required for clinicals and may be purchased with clinical uniform.

The following list, are items the student will need to purchase, at a store of their choice:

- ✓ **Tennis Shoes:** Shoes must be mostly white and should provide quality support to the feet during clinical.
- ✓ **Vital Signs Equipment** (stethoscope and blood pressure cuff)
- ✓ **Plain White Socks – 2 Pairs**
- ✓ **Watch with Second Hand**
- ✓ **2 Pens and Notebook Paper/Notebook**
- ✓ **2 Pencils**

Total Estimated Cost: \$200 – \$225

AREA TECHNICAL SCHOOL WILL PROVIDE:

- ✓ **Textbook and Student Workbook**
- ✓ **CPR Training, Certification, and Book**
- ✓ **State Certified Nursing Assistant Examination Fee**

Students may purchase additional (optional) supplies at a discount, such as a clinical jacket, stethoscope, and a blood pressure cuff. More information and order forms for the clinical uniforms will be given during the first week of class. Upon acceptance into the program, students will receive a summer packet with instructions which will explain that they are to submit the following documents:

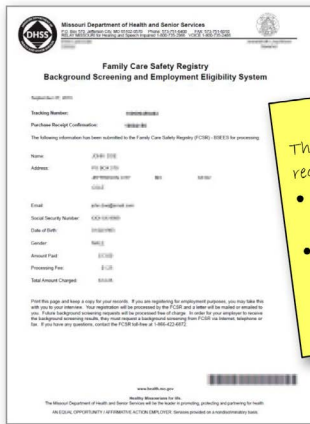
- A copy of the student's signed Social Security Card on a full-sized sheet of paper
- A copy of student's immunization record
- A copy of student's PPD (TB Tests) – both Step I & Step II
- A copy of the student's background check – this should have been received in the mail after registering online with Family Care Safety Registry (FCSR).

Each student will undergo an extensive background check to help ensure their safety and the safety of the individuals for whom they will be providing care to.

1. State criminal history and sex offender registry, records maintained by the Missouri Highway Patrol
2. Child abuse/neglect records, maintained by the Department of Social Services
3. The Employee Disqualification List, maintained by the Department of Health and Senior Services
4. The Employee Disqualification Registry, maintained by the Department of Mental Health
5. Child care facility licensing records, maintained by the Department of Health and Senior Services
6. Foster parent, residential care facility, and child placing agency licensing records, maintained by the Department of Social Services
7. Residential living facility and nursing home licensing records, maintained by the Department of Health and Senior Services
8. Office of Inspector General (OIG)
9. System for Award Management (SAMS)

Each student must register online with the Family Care Safety Registry (FCSR), administered by the Missouri Department of Health and Senior Services (DHSS), provides families and other employers with a method to obtain background screening information. The Registry, through various state agencies, offers several resources to screen child care, elder care, personal care workers, including child care and elder care providers.

After registration remember to print out your confirmation of registration!



NOTE
The printer-friendly confirmation requires:

- The free Adobe Acrobat Reader software, Version 9 or higher
- Pop-up blocker settings be modified to allow pop-ups from *.dhss.mo.gov



Missouri Department of Health & Senior Services
Family Care Safety Registry
Toll-free: (866) 422-6872
www.health.mo.gov/safety/fcsr

HEALTH SERVICES II

(12TH GRADE, COMPLETED HEALTH SERVICES ASSISTANT) 16 YEARS OF AGE OR OLDER UPON ENROLLMENT A.M. OR P.M. (DEPENDING ON ENROLLMENT)

Health Services II is designed to build on the foundational skills mastered in Health Services I. The Health Services II student will develop advanced skills leading to certification as a Patient Care Technician (PCT).

Health Services II students will master skills including, but not limited to: Phlebotomy, EKG, glucose testing, wound care, and respiratory treatments. The student will also have the opportunity to complete several credit hours of college coursework: COL 100 (Introduction to College), HIT 122 (Medical Terminology), and CIS 125 (Computer Concepts and Applications). All coursework leads to PCT certification and ability to work in the hospital setting upon graduation from high school.

Students will be able to perform skills that will “stack” on to the CNA skills to prepare them for work within the hospital setting. These skills will also prepare students for transition into nursing programs of study.

Minimum Requirements:

- CNA Certification and completion of Health Services I
- BLS (CPR) Certification
- Two-Step Tuberculosis Screening
- Immunizations
 - MMR
 - Varicella
 - Flu Vaccine
 - Hepatitis B
 - COVID-19 Vaccine

General Science Health Applied Math through Algebra Biology and Chemistry (Recommended for Nursing and Allied Health Careers)

Estimated Instructional Materials Requirement:

Students enrolled in the Health Services Assistant Program are required by the Missouri Department of the Division of Health Standards and Licensure to participate in a supervised learning experience in a related health service facility. Since this type of instruction cannot be given on the Jefferson College campus, students enrolled in the program must provide their own transportation when the class meets off campus. Clinical instruction is at a local, acute care hospital.

Students will be responsible for purchasing items listed on the Health Services Supply List.

HEALTH SERVICES II SUPPLY LIST

STUDENT IS RESPONSIBLE FOR PURCHASING:

- ✓ **Gait Belt for Clinical**
- ✓ **Uniforms for Clinical:** Students will be required to purchase two uniforms for clinical. Uniforms are ordered through a company who comes to the classroom. Cost varies slightly and is paid to the uniform company.) Instructors will provide students with more detailed information in the first week of class. The clinical uniforms are program specific with a logo and the students' first name. A canvas cloth gait belt is required for clinicals and may be purchased with clinical uniform.

The following list, are items the student will need to purchase, at a store of their choice:

- ✓ **Tennis Shoes:** Shoes must be mostly white and should provide quality support to the feet during clinical.
- ✓ **Vital Signs Equipment** (stethoscope and blood pressure cuff)
- ✓ **Plain White Socks – 2 Pairs**
- ✓ **Watch with Second Hand**
- ✓ **2 Pens and Notebook Paper/Notebook**
- ✓ **2 Pencils**
- ✓ **EKG Caliper**

Total Estimated Cost: \$200 – \$225

HEATING, REFRIGERATION AND AIR CONDITIONING TECHNOLOGY

(11 & 12TH GRADES)

AM FIRST YEAR STUDENTS • PM SECOND YEAR STUDENTS

Over the first two semesters in the HVAC program, the student will take four classes: Basic Electric, Sheet Metal, Principles of Refrigeration, and Piping and Design. Below is a sample of the skills the students can expect to learn during their first year in the program:

- How to use an electrical tester
- Common electrical symbols used in the HVAC industry
- How to do basic electrical troubleshooting
- How to read a basic wiring diagram
- How to properly use pipe wrenches
- How to calculate the longest run for gas fuel runs
- How to properly size ductwork for a house
- How to fabricate sheet metal The refrigeration circuit
- How to calculate superheat/sub-cooling
- How to braze copper tubing

First year students will also have the opportunity to earn the OSHA 30 credential.

During the second year of HVAC, students will build upon the foundational skills listed above and will also focus on:

- Earning their EPA Universal Certification
- How to recover/charge a unit
- How to weigh-in refrigerant
- How to write a service ticket
- How to leave a proper voice message
- Sequence of operation for 90+ furnaces
- How to change out a blower assembly
- Names for various gas components
- Basic trouble-shooting on a functional air conditioner
- How to change out a compressor
- How to change out a condenser fan

To continue in the spring semester of the second year of the HVAC program, second year students must earn a “C” in Refrigeration and A/C Mechanical systems and their Universal EPA certification. They will also have the opportunity to earn their Basic Charging and Procedures certification through ESCO.

Instruction for both years of the HVAC program involves classroom and laboratory experiences. Successful students in HVAC are comfortable with mathematical concepts (i.e., reading a tape measurer, etc.) and have the ability to read at a 10th grade level.

Recommended High School Courses: General Shop, Physical Science, Applied Mathematics, Geometry

Estimated Tool Requirements: First year students are required to provide their own electrical tester, safety glasses, HVAC Refrigeration gauges, and lock to secure their tools in the lab.

Second year students who are successful in this program will be eligible to receive an Installer’s Certificate from Jefferson College.

All students will register as members of SkillsUSA, a student-run organization. Dues are \$25 or \$30 with a t-shirt.

METAL FABRICATION

**(10, 11, & 12TH GRADES)
A.M. & P.M.**

Metal Fabrication provides students with specialized learning experiences in metal work as well as the development of positive work habits. Students will be taught professionalism, strong work ethic, responsibility, problem solving, and the importance of collaboration on a team. Students are prepared to assume the duties of an all-around metal worker capable of fabricating and assembling a variety of metal products in many industries. The program is comprised of three components: sheet metal, machining, and welding. Instruction includes theory, laboratory, and shop work as they relate to materials layout.

Students will learn how to welding using SMAW, GMAW, GTAW using basic through advanced techniques. Students will also learn sequence operations; set up and operate fabrication equipment; position, align, fit and weld parts; and design. Materials used during fabrication include items which are machined, shaped, cut, bent, pressed, and fused. Metals used in the shop include aluminum, stainless, and carbon steel.

Equipment used in the class will include but is not limited to:

- Multi-process Welders
- 6' hydraulic shear
- 4' hydraulic shear
- Plasma cutters
- Vertical Mill
- Waterjet Cutter
- Fork Lift (5,000lb rated capacity)
- Horizontal lathe
- Hyd-mech band saw
- 4" pipe cutter and threader
- 2" pipe cutter and threader
- 8' hand brake
- Foot pedal shear

Students must be enrolled as a high school sophomore, junior, or senior. The student must have a basic understanding of the following mathematical concepts: addition, subtraction, multiplication, and division. The student should understand and be functional in these concepts as they pertain to whole numbers, fractions, and decimals.

Recommended High School Courses:

Metal Fabrication, General Shop, General Metals, Applied Math Geometry

These courses are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this technical program.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Tool/Supply Requirements:

- 20' Tape Measure
- Pen or Pencil
- Three Ring Binder
- Safety Glasses (2)
- Welding Jacket
- Striker with Extra Flints
- Welding Helmet
- Soapstone
- Chipping Hammer
- Vise Grips
- Tip Cleaner
- Cutting Goggles
- Wire Brush
- Steel Toe Work Boots
- Square/Square Combination or Speed Square
- White Out Marker
- Sharpie
- Mill Bit 3/8 diameter four flute high speed steel
- Ear plugs
- Machinist Rule
- Welding Gloves (Gauntlet type)

Total estimated cost: \$140.00

- 4.5 inch grinder with wire wheel and grinding wheels
(SUGGESTED for 1st year; REQUIRED 2nd/3rd year)
- Mig Pliers (2nd/3rd year)
- Mig Gloves (optional)
- Tungsten (3rd year)

Tools/supplies are not required to be new, but must be in safe working condition.

PRECISION MACHINING TECHNOLOGY

**(12TH GRADE)
A.M. ONLY**

In this program, students will learn integration in industrial manufacturing which is the key to providing high precision and intricate machined materials parts into the world's growing demand for extremely technical design. With the assistance of computer aided drafting and computer aided manufacturing (CAD/CAM), the gap between manufacturing and engineering tightens. The results of this integration are higher standards of precision and quality along with programming, set-up, and machine cycle time reduction of CNC machining centers and turning centers.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude and maintain good attendance throughout the school year.

Recommended High School GPA of a 2.5 or higher.

Courses:

General Shop, Applied Math/Algebra, Career Exploration, General Materials, CAD

These courses are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tool/Supply Requirement:

Program covers tooling costs at this time

- Safety glasses
- Daily school supplies (paper, notebook, flash drive, etc.)

RESIDENTIAL CARPENTRY

**(10, 11, & 12TH GRADES)
A.M. & P.M.**

Residential Carpentry is a pre-apprentice program designed to provide graduates with Industry Recognized Credentials. By obtaining these credentials, students create an opportunity for themselves to enter the Carpenters Union Apprenticeship program. Students will acquire hand and power tool training, job-site safety instruction, become familiar with industry vocabulary and materials, floor framing, wall and ceiling framing, roofing and roof framing, windows and doors, along with interior and exterior finishes. These topics will be covered in the lab setting, classroom, job-site, and real-world work environments.

Students can submit their application during their freshman year in order to attend as early as their sophomore year. A basic understanding of addition, subtraction, multiplication, and division, as they pertain to whole numbers, fractions, and decimals will be beneficial.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions, work independently, as well as perform as part of a team to achieve course objectives. Students are expected to maintain their attendance, demonstrate good work ethic, and have a positive attitude throughout the school year.

Instruction will involve both classroom and laboratory experiences, with limited home study required.

Recommended High School Courses:

General Shop, Woodworking, General Mathematics, Applied Math, Geometry, Vocational Exploration, Physical Education

These courses are not established as prerequisites. However, students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tool Requirements:

- Safety Glasses
- Apex kit
- 25-foot tape

Total Estimated Cost: \$20-25

ADVANCED RESIDENTIAL CARPENTRY

(RETURNING RESIDENTIAL CARPENTRY I STUDENTS) A.M. & P.M.

Instruction consists of application of the topics covered in Residential Carpentry with performance of skills in construction techniques and processes through construction of an actual permanent structure.

Successful completion of the program may lead to union apprenticeship, semi-skilled and laborer type employment within the carpentry and construction industry. The training experience may also be used as preparation for additional technical education.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required. Students will build a single family home over the course of the school year.

Minimum Requirements: Completion of Residential Carpentry with the Grade of a “C” or better.

Recommended High School Courses:

General Shop, Woodworking, Applied Math, Vocational Exploration, General Mathematics

These courses are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tool Requirements:

- Carpenters’ tool box and lock
- White carpenters’ bib overalls or painters’ pants
- Safety glasses and case (not goggles)
- Straight claw
- Combination square
- 2 or 3 ft. sands
- Cat’s paw bar
- String line
- 3/4” wood chisel
- Phillips screwdriver
- Flat (standard) screwdriver
- Leather tool pouch
- Hard hat
- Framing hammer
- 25-30 ft. measuring tape
- Tri square with 1-1/2” wide blade
- Chalk line and chalk
- Utility knife and blades
- Scratch Awl Speed square (optional)
- 1/32” and 3/32” nail sets
- Magnesium level (optional)

Total Estimated Cost: \$250.00

Please Note: Suitable work attire appropriate to the occupation will be required, Suitable work boots must be worn. Soft shoes such as tennis shoes will not be allowed.

If there are any questions on type or quality of tools, see the instructor prior to purchase to be sure to get the correct tools. If students already have some of the tools needed, it is not necessary to purchase new ones.

It has been our experience that carpenters’ overalls and carpenters’ tool boxes are usually in short supply. These two items should be purchased as soon as possible to avoid the likelihood of not being able to obtain them.

WELDING TECHNOLOGY

**(11 & 12TH GRADES)
A.M. & P.M.**

The instruction in Welding Technology will progress from basic gas and arc welding through advanced arc, gas metal arc (MIG), gas tungsten (TIG), and advanced welding techniques. Instruction in Industrial Math, Industrial Blueprint Reading, an introduction to Metallurgy and Dimensional Metrology (precision measuring equipment) are also included.

The student must be enrolled as a junior or senior in high school. The student must have a basic understanding of the following mathematical concepts: addition, subtraction, multiplication, and division as they pertain to whole numbers, fractions, and decimals.

Students enrolled in a Career Education Program are expected to conduct themselves in a professional manner. Students must be able to follow instructions and work as a member of a team to achieve the course objectives. Students are expected to be accurate, have a positive attitude, and maintain good attendance throughout the school year.

Instruction will involve both classroom and laboratory experiences with home study required.

Minimum Requirements: Applied Math, General Shop, General Metals

These classes are not established as prerequisites. Students that have been successful in any of these courses have historically demonstrated a higher degree of success in this career education program.

Estimated Tools/Supplies Requirements:

Safety glasses, clear	\$6.50
Tip cleaner	\$2.00
Chipping hammer	\$8.50
Hand wire brush	\$1.00
Cutting goggles with #5 lens.	\$8.00
Welding helmet with #10 lens.	\$23.00
Combination Square	\$15.00
Vise grip	\$18.00
Flint type striker	\$1.50
Scientific Calculator (For Mathematics)	\$15.00
Protractor	\$3.00
Welding gloves (heavy)	\$4.50
Welding gloves (Tig)	
Tillman 24CL.	\$8.50
Welding jacket (green)	\$13.00
Leather Sleeves w/cape	\$40.00
Boots	\$50.00
12' Tape measure	\$15.00

Prices are approximate and may vary depending on source. Jefferson College does not recommend any particular supplier over another. However, all tools should be of professional quality.

Total Estimated Cost: \$266.50

Jefferson College

1000 Viking Dr.
Hillsboro, MO 63050
(636) 481-3000 or 797-3000
www.jeffco.edu

