



Lewis & Clark Career Center
Course Enrollment Guide

Lewis & Clark Career Center
Course Clusters

<p><u>Advanced Manufacturing</u></p> <ul style="list-style-type: none">● Precision Machine Technology● Combination Welding	<p><u>Construction Trades</u></p> <ul style="list-style-type: none">● Brick & Stone Masonry● Building Trades – Carpentry● Electrical Trades● Heating, Ventilation, & Air Conditioning (HVAC)
<p><u>Auto, Engine, & Mechanical Sciences</u></p> <ul style="list-style-type: none">● Auto Collision Repair● Auto Service Technology● Power Equipment Technology	<p><u>Education</u></p> <p><u>Preschool & Elementary Careers</u></p> <ul style="list-style-type: none">● Early Childhood Career (Birth - 3rd grade)
<p><u>Computer Science Classes</u></p> <ul style="list-style-type: none">● Computer Maintenance & Networking● Software Development 1● Software Development 2	<p><u>Health Sciences</u></p> <ul style="list-style-type: none">● Health Occupations● Health Related Occupations

ADVANCED MANUFACTURING

PRECISION MACHINE TECHNOLOGY

2 year program; 3 units of credit per year

Prerequisite: C or better in Algebra I

The goal of this program is to supply the industry a highly qualified workforce by graduating exceptional students that are highly motivated and skilled in the needs and requirements expected by the manufacturing community. The students will learn the history of machining, machine safety, blueprint reading, mechanical design, utilization of conventional machine techniques and Computer Numerical Controlled (CNC) programming.

Year one will consist of: Safety and OSHA, Brief History of Machining, Blueprint Reading, Basic Mechanical Design, Machining Safety, Manufacturing Processes, Semi Precision Measurement, Precision Measurement, Layout, Metallurgy and Heat Treat, Manufacturing Processes, Drill Press, Conventional Engine Lathe, Conventional Vertical Mill, Surface Grinder, Brief History of CNC Machining, Introduction to Computer Numerical Control Systems and Programming.

Instructional delivery will be both in the classroom and the shop. Both project-based and problem-based learning methods will be utilized.

COMBINATION WELDING

2 year program; 3 units of credit per year

Prerequisite: Asthma Free

Combination welding is open to students interested in welding and metalworking as an occupation. Students are instructed in shop safety and the proper procedures for each welding process. Oxy fuel cutting, arc, mig and tig welding, plasma cutting, and air arc cutting processes are taught in all four weld positions and on the five basic weld joints. Metallurgy, blueprint reading, reading a tape measure, metal fabricating techniques and weld symbols are included in the program.

The lab is setup to simulate the welding industry. Students are evaluated by written tests and by testing their welds as specified by the American Welding Society code.

Students interested in a career in welding should have good eye/hand coordination, mechanical aptitude, and manual dexterity, freedom from asthma, allergies and physical disabilities which prevent bending, stooping, lifting and working in awkward positions.

AUTO, ENGINE, & MECHANICAL COURSES

AUTO COLLISION REPAIR

2 year program; 3 units of credit per year

This course is open to juniors who have an interest in auto collision repair as a wage earning occupation.

One year of the two year program students will learn non-structural repair methods. These include mig welding, straightening and aligning sheet metal, applying and shaping plastic fillers, plastic panel identification and plastic repair methods.

The other year will concentrate on painting and refinishing. Students will learn proper paint preparation procedures, masking techniques and detailing cars. Primer, sealer and basecoat/clearcoat application will be covered along with paint defect identification and repair. Proper spray gun techniques will be taught and practiced with lots of hands on spraying of primers, paints and clears.

Both years customer satisfaction, measuring and damage analysis along with writing a damage report will be covered. The course is geared to prepare students for entry level auto collision repair and to help prepare for the ASE (Automotive Service Excellence) certification tests. The curriculum is based on the I-CAR (Inter-Industry Conference on Auto Collision Repair) instruction and is used throughout the course. Students will have the opportunity to earn the I-CAR ProLevel 1 in Non-Structural Repair and Refinishing Certification.

AUTO SERVICE TECHNOLOGY

2 year program; 3 units of credit per year

This course is open to individuals who have an interest in auto service trades in terms of a career goal. It is recommended that students have credit in general shop, general metals course and basic computer skills.

Automotive instruction at Lewis & Clark consists of a two-year program that provides the student with the basic theory and skills needed to become an entry level automotive technician and service today's automobiles. Classroom instruction is followed by shop activities related to the lecture. Customer cars are repaired in the same manner as in the professional shop under the instructor's supervision. Students will gain experience in shop management by writing repair orders, ordering parts, issuing supplies and tools used in the trade.

This course is ASE (Automotive Service Excellence) certified by NATEF (National Automotive Technician Education Foundation). Both NATEF and ASE are nationally recognized and provide certification for shops and technicians across the country.

Areas of instruction include:

Engine Repair

Brakes

Steering and Suspension

Heating / Air Conditioning

Electrical / Electronics

Engine Performance

Manual/Automatic Transmission (Basic)

Instructional time is (approximately) 50% class and 50% lab.

POWER EQUIPMENT TECHNOLOGY

1 and/or 2 year program; 3 units of credit per year

College credit can be purchased through The University of Central Missouri (optional)

This program prepares juniors and/or seniors to diagnose and repair two- and four-cycle engines on such equipment as lawn mowers, chainsaws, roto tillers, edgers and trimmers. Power equipment instruction ranges from home-use equipment to commercial equipment.

Students will learn to adjust, clean, lubricate and when necessary replace worn or defective parts such as spark plugs, ignition parts, valves and carburetors. Other skills taught include wheel alignment, deck repair, blade balancing, blade and chain sharpening, battery testing and electrical repair. Troubleshooting and problem solving on all types of equipment are stressed.

Good reading skills are required, as students will need to be able to refer to service manuals for detailed directions.

COMPUTER SCIENCE COURSES

COMPUTER MAINTENANCE & NETWORKING

1 year program: 3 units of credit

This program is open to juniors and seniors who have an interest in computers and the Information Technology field. This class learns about computer operating systems, hardware and basic networking. The class prepares you to take the CompTIA A+ exam; an IT technician certification.

Students who successfully complete this program will be able to work as an entry level help desk technician, a computer repair technician, or a computer support technician in all types of business and industry. This class also prepares you for future study in the hardware, operating systems or networking fields.

An interest in technology & computers, keyboarding skills and familiarity with Word & PowerPoint are essential.

The program has an articulation agreement with St. Charles Community College.

SOFTWARE DEVELOPMENT 1

1 year program: 3 units of credit

Prerequisites: 10th grade reading level

This program is open to juniors, seniors, and post-secondary students who have an interest in Software Development as a wage earning occupation or post-secondary degree.

Students will learn Linux/Unix Operation and Administration, practice Software Version Control (through Git/Github), use the Agile software development methodology (mainly SCRUM), and develop software using languages such as MIT's App Inventor, Python, and Java.

This course incorporates the PLTW Computer Science courses CSP and CSA as part of the curriculum, along with Grok Learning (Python curriculum), and the Linux+ and LPIC-1 learning standards.

Students who successfully complete this program will be able to develop software using industry-recognized tools and methodologies. (Agile, Github, Android Studio)

SOFTWARE DEVELOPMENT 2

1 year program: 3 units of credit

Prerequisites: 10th grade reading level, completed Computer Science 1 with 85% or higher, and have instructor approval OR 10th grade reading level, have completed BOTH CSP and CSA with an EOC score of at least 7 or higher, and instructor approval. Student may have to submit examples of work.

This program is open to juniors, seniors and post-secondary students who have in interest in Software Development as a wage earning occupation or post-secondary degree.

Students will learn Intermediate Linux/Unix Administration, and continue improving software development techniques by studying game development with both Python and C++. Other topics will include Encryption, Web development, and robotics as time allows. Students will also be expected to emulate Industry practices by acting as mentors to first year students.

Students who successfully complete this program will be able to develop more advanced software for PC, Mobile, and Web-based applications.

CONSTRUCTION TRADES

BRICK & STONE MASONRY

2 year program; 3 units of credit per year

This program is designed to prepare students for apprenticeship or entry-level jobs in masonry construction. Students will learn to lay brick and block in various bond patterns used in commercial and residential construction. Course will include construction techniques for building fireplaces and chimneys, arches, special wall openings, double width and reinforced masonry, wall anchoring systems, flashings and prevention of water penetration and masonry paving. Students will also gain knowledge of various types of stone construction and tuck-pointing.

Units of study will cover safety practices and procedures; tools and equipment used in masonry construction; properties, sizes and uses of clay and concrete masonry units; experience in laying brick, block and stone in various bond patterns; reinforced masonry walls; masonry veneer construction; layout and construction of fireplaces and chimneys; mathematics for masonry and measuring systems; blueprint reading and construction plans.

Students must be able to work at heights on scaffolds, lift and handle heavy materials, work in group situations as a team member, follow instructions and accomplish all tasks in an accurate and safe manner.

BUILDING TRADES – CARPENTRY

2 year program; 3 units of credit per year

This course is open to juniors who show an interest and aptitude in the field of construction as a wage earning occupation.

Students are familiarized with entry level skills for the major trades involved in residential construction such as carpentry, siding, interior trim, drywall hanging, roofing, concrete work and landscaping.

Most of the program involves the actual building of a house in Lewis & Clark Career Center's own subdivision. Students not only gain experience in home construction, but also will learn about subdivision construction. Houses are sold upon completion. Students will gain experience in building both a single and a two-story dwelling.

Students will have the opportunity for OSHA 10 and WORKKEYS.

It is recommended that students have one year of industrial arts.

ELECTRICAL TRADES

2 year program; 3 units of credit per year

Prerequisite: Algebra with a "C" or higher

Read at or above Grade Level

This course will teach students to identify, install, and troubleshoot electrical wiring and associated devices that are commonly used in both residential and commercial environments. Students will participate in the construction of a new house. The program includes switches, receptacles, lighting, low voltage communications wiring, service installation, and other wiring associated with residential electricity. Students will also learn fundamental commercial wiring including Start – Stop Stations, single and 3 phase motors, and transformers.

Students must be physically fit and capable of working under adverse weather conditions including both very hot and freezing cold. We work during all types of weather on the school house. We work with real circuits, so the ability to abide by strict safety rules is extremely important. An aptitude for math in general and algebra in particular is required, as is an aptitude to read and produce technical documents and drawings.

HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

2 year program; 3 units of credit per year

Prerequisite: Algebra

This course will provide students with training in heating, ventilation, air conditioning, and refrigeration to qualify them for employment as an apprentice or helper assistant to an A/C mechanic in service and/or installation of equipment. We will cover tool selection and use, tubing, piping, brazing, soldering and basics of vapor compression refrigeration, air conditioning & heating systems. Electric circuits and components, troubleshooting, basic sheet metal, customer relations, and preparation for the EPA exam will also be covered.

Applicants should have a good mechanical aptitude and be able to understand both written and verbal instructions. Students should be in good physical condition and free from respiratory problems.

EDUCATION

Preschool & Elementary Careers

EARLY CHILDHOOD CAREERS

1 Year Program; 3 units of credit

Prerequisite; Prior Child Development course recommended

This course will prepare students for entry level employment in the field of early childhood education, while providing the foundations for study in higher education programs that lead to certification in early childhood or elementary education. Students will gain the leadership, employment, and communication skills necessary for success in Early Childhood Careers. Over the course of the program students will explore career opportunities and identify personal traits needed for success in careers working with young children. They will be given opportunities to work directly with children ranging in age from birth to age 8 in various childcare and elementary school settings. Students will earn certification in infant, child, and adult CPR. Students completing this program will be able to describe typical child development, demonstrate knowledge of creating safe and healthy learning environments, and be competent in lesson planning and implementation. Students will practice appropriate behavior management techniques, and will learn about nutritional guidelines, state licensing expectations, and the legal and ethical responsibilities of child care workers and/or classroom teachers.

HEALTH SCIENCES

HEALTH OCCUPATIONS & HEALTH RELATED OCCUPATIONS

1 year program; 3 units of credit

The Health/Health Related Occupations courses offer learning experiences for juniors and seniors in high school designed to create or further stimulate their interest in the many career opportunities available in the health field. This course is designed to be challenging and meet the needs of all learning styles. The student will learn beginning skills and the basic procedures needed for an entry-level job and a sound basis for continuing their education in the medical field.

The first semester involves classroom theory, demonstrations and practice. During the second semester, students begin to draw upon previously acquired knowledge and basic skills by applying them to various health services through supervised clinical observations and experiences. Students must have an up to date immunization record, a TB test, a urine drug screen, a criminal background check, a flu vaccine, and maintain a 75% average and 90% attendance to remain in the program and be placed in clinical rotations. Students are placed in clinical rotations Monday through Thursday and continue classroom work on Fridays.

RETAIL BUSINESS

APPLIED RETAIL AND BUSINESS SKILLS

1 and/or 2 year program; 3 units of credit per year

This course is designed for juniors or seniors with special needs who have an interest in the retail industry. A prerequisite for the course is potential ability to work in competitive employment.

The program provides an active, hands-on, multimedia approach that emphasizes instructional strategies that are successful with special needs populations. The students take “ownership” of and operate a fully functional store on the Lewis & Clark campus.

The students in the Applied Retail & Business Skills program rotate through the following stations at JC’s, the school store: cashier, inventory control, maintenance, bookkeeper, food preparation, and food manager. The classroom instruction includes lessons to inform and enhance training and skills learned through operations. Also included are lessons on self-awareness, social skills, communication skills, and employability skills.

Skills learned at the Lewis & Clark campus are reinforced through community-based training. Students that qualify for the independent internship will be eligible for placement within the community with minimal supervision. The remaining students will complete their internships at JC’s (Lewis & Clark store) with continued supervision; with the emphasis on job readiness and work hardening skills, along with a heavier workload and increased responsibilities.