

METAL FABRICATION (457)

457-110. Blueprint Reading - Fab. (2 Credits)

Develop basic skills in interpreting welding drawings used in today's welding shops. Includes fundamentals of orthographic projection, dimension techniques, section views, and welding symbols. Learners sketch various views of an object to help visualize the relationship between views.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=110>)

457-120. Thermal Cutting - Manual. (2 Credits)

Apply safe handling of cutting equipment and gas cylinders. Learn manual and machine oxygen fuel cutting, plasma cutting and air carbon arc cutting. Visually inspect welds and cut edges.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=120>)

457-121. Automated Cutting Processes 1. (2 Credits)

The purpose of this course is to educate Metal Fabrication students in the area of advanced cutting processes. Students will be given the opportunity to setup, program, operate and perform maintenance on CNC controlled machines used to process different materials. Cutting processes covered during the duration of this course will be, Laser, Plasma, and Oxy/Acetylene cutting. Students will be required to operate multiple pieces of equipment throughout the course of the semester. To be successful it is highly recommended that the student has completed or is currently enrolled in Blueprint Reading for Metal Fab, and Industrial Math 1.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=121>)

457-122. Automated Cutting Processes 2. (2 Credits)

Students will expand upon the competencies developed in Automated Cutting Processes 1 and Computer Assisted Programming/Laser to create advanced nests, perform cost estimating, maximize sheet utilization, importing part files, and repairing geometry.

Prerequisites: 457-121 with a minimum grade of C and 457-170 (may be taken concurrently) with a minimum grade of C

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=122>)

457-125. Manual Thermal Cutting Process. (1 Credit)

Apply safe handling of cutting equipment and gas cylinders. Learn manual and machine oxygen fuel cutting, plasma cutting and air carbon arc cutting. Visually inspect welds and cut edges.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=125>)

457-150. SolidWorks for Metal Fab. (2 Credits)

The purpose of this course is to give the student an understanding of Process Planning, in process inspection, and fixturing for accurate fabrication. Topics to be covered in this course will expose the student to Metal Fabrication from design to manufacture of finished goods. There will be an emphasis on, inspection, component design and working drawings. Solidworks software will be the design format with a focus on sheet metal, weldments, and structural steel.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=150>)

457-151. Advanced Forming Processes 1. (1 Credit)

Learn the advanced equipment and techniques needed to form complex part profiles. Explore safety; the first part inspection process; detailed machine and tooling descriptions; and press brake programming, setup and operation.

Prerequisites: (457-164 with a minimum grade of C or 457-165 with a minimum grade of C or 457-365 with a minimum grade of C) and (804-107 with a minimum grade of C-) or (804-304 with a minimum grade of C- and 804-305 with a minimum grade of C-) or (804-113 with a minimum grade of C- or 804-115 with a minimum grade of C- or 804-198 with a minimum grade of C-) or 804-116 with a minimum grade of C- or 804-118 with a minimum grade of C- or 804-195 with a minimum grade of C-

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=151>)

457-152. Advanced Forming Processes 2. (1 Credit)

Learn strategies to produce parts proficiently and the hands-on techniques needed to form complex parts and assemblies. Explore safety, radius profiles, bump bending, press troubleshooting, production methods and the use of offline software to program parts. Demonstrate advanced process knowledge and hands-on skills through written assessments, related projects and proficiently programming forming parts using press brake software.

Prerequisites: 457-151 (may be taken concurrently) with a minimum grade of C

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=152>)

457-154. Advanced Forming Processes. (2 Credits)

Learn the advanced process of forming product using automated equipment. Demonstrate proficiency of forming by choice of tooling, calculations and sequence of forming.

Prerequisites: (457-165 with a minimum grade of C- or 457-365 with a minimum grade of C-) and (804-113 with a minimum grade of C- or 804-107 with a minimum grade of C-)

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=154>)

457-155. Adv Manufacturing Capstone. (4 Credits)

Advanced Manufacturing Capstone will incorporate the competencies obtained from other courses in the Advanced Manufacturing program to develop and build 5 completed projects utilizing the equipment in the Metal Fabrication Shop. Students, in teams of 4 or 5 members, will set-up, program, operate, weld, assemble, inspect, and finish/coat to complete these tasks.

Prerequisites: (457-154 with a minimum grade of C or 457-151 (may be taken concurrently) with a minimum grade of C and 457-152 (may be taken concurrently) with a minimum grade of C) and (457-150 with a minimum grade of C and 457-170 with a minimum grade of C and 457-122 (may be taken concurrently) with a minimum grade of C and 457-164 with a minimum grade of C) and (442-152 with a minimum grade of C or 442-150 with a minimum grade of C)

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=155>)

457-160. Metal Fabrication 1. (5 Credits)

Learn the basics of metal fabrication safety, production, measuring, hand tools and layout. Learn how to use power shears, press brakes, box and pan brake, drilling equipment, hydraulic iron worker and various power saws. Demonstrate proficiency in fabrication through related projects. Prerequisites: (457-110 (may be taken concurrently) with a minimum grade of C or 457-310 with a minimum grade of C) and (442-150 (may be taken concurrently) with a minimum grade of C or 457-350 with a minimum grade of C) and (804-107 (may be taken concurrently) with a minimum grade of C or 804-304 (may be taken concurrently) with a minimum grade of C or 804-113 (may be taken concurrently) with a minimum grade of C or 804-115 (may be taken concurrently) with a minimum grade of C)

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=160>)

457-161. Intro to Metal Fabrication. (2 Credits)

Learn how to function safely in the workplace while also learning the basics of metal fabrication, production, measuring, proper use of hand tools and layout. Learn to use power shears, spot welding equipment, box and pan brake, manual slip roll and various power saws. Construct entry-level fabrications using manual machines and common welding processes.

Prerequisites: (457-110 (may be taken concurrently) with a minimum grade of C or 457-310 (may be taken concurrently) with a minimum grade of C) and (442-150 (may be taken concurrently) with a minimum grade of C or 442-152 (may be taken concurrently) with a minimum grade of C) and (804-107 (may be taken concurrently) with a minimum grade of C- or 804-304 (may be taken concurrently) with a minimum grade of C- and 804-305 (may be taken concurrently) with a minimum grade of C- or 804-113 (may be taken concurrently) with a minimum grade of C- or 804-115 (may be taken concurrently) with a minimum grade of C- or 804-116 (may be taken concurrently) with a minimum grade of C- or 804-118 (may be taken concurrently) with a minimum grade of C- or 804-195 (may be taken concurrently) with a minimum grade of C- or 804-198 (may be taken concurrently) with a minimum grade of C-)

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=161>)

457-162. Metal Fabrication 1. (3 Credits)

Building on the introductory course, continue to demonstrate safe work practices while learning more about the fundamentals of metal fabrication, production and measuring. Become proficient in using different types of fabrication equipment, including a press brake, drilling machines and hydraulic ironworker. Construct skill-based fabrications to industry-standard tolerances using powered equipment and CNC press brake equipment.

Prerequisites: 457-161 (may be taken concurrently) with a minimum grade of C

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=162>)

457-163. Metal Fabrication 2. (2 Credits)

Learn the intermediate procedures used in a modern metal fabrication environment. Explore safety, layout, flat bank development, press brake programming, weld assembly and final part inspection. Gain more in-depth knowledge and abilities by using the shear, notcher, rollers, press brakes, hydraulic ironworker, drill press and various power saws at levels not previously explored.

Prerequisites: 457-160 with a minimum grade of C or 457-162 (may be taken concurrently) with a minimum grade of C

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=163>)

457-164. Advanced Metal Fabrication. (3 Credits)

Learn the advanced metal fabrication techniques needed to build, weld and finish complex assemblies. Explore safety, layout, production methods, press brake programming setup, metal finishing and final part inspection. Gain advanced knowledge and practice higher-level fabrication techniques using power shears, press brakes, power roller, drilling equipment, hydraulic ironworker, tube benders, various tube notchers and power saws.

Prerequisites: 457-163 (may be taken concurrently) with a minimum grade of C

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=164>)

457-170. Computer Assist Prog Laser. (2 Credits)

This course is designed to prepare students for Computer Assisted programming of Laser machines. The course will focus on advanced concepts used to program complex parts in a manufacturing environment. Students will use Sigmanest software to generate the shapes and nest those shapes to optimize material usage to satisfy customer orders. The student will complete several exercises as part of the instruction and will be required to submit projects via email/electronic media. The instruction will require the student to generate and print detailed reports as well as monitor material usage and inventory. Students will be required to operate multiple pieces of equipment throughout the course of the semester. To be successful it is highly recommended that the student has completed or is currently enrolled in Blueprint Reading for Metal Fab, and Industrial Math 1.

Prerequisites: (457-110 (may be taken concurrently) with a minimum grade of C or 457-310 with a minimum grade of C) and (457-121 (may be taken concurrently) with a minimum grade of C or 457-321 (may be taken concurrently) with a minimum grade of C)

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=170>)

457-402. SolidWorks for Metal Fab. (3.2 Credits)

Gain an understanding of process planning, in-process inspection and fixturing for accurate fabrication. Explore metal fabrication from design to manufacture of finished goods. Topics include inspection, component design and working drawings. Use SolidWorks software as the design format, with a focus on sheet metal, weldments and structural steel.

See sections of this course (<http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=457&num=402>)