FABRICATION TECHNOLOGY

Assemblers and fabricators build finished products and the parts that go into them. They use hand tools and machines to make vehicles, toys, electronic devices, and more. Fabricators begin with the design of the part (drafting), move to the production of the part (CAD/CAM-CNC), and complete the finished product (welding).

- Fabrication Technology Certificate (https://coursecatalog.tvcc.edu/pathways/service-production-industry/fabrication-technology-certificate/)

DFTG-1305. Technical Drafting. (3 Credits)
(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to reading, interpreting, and developing technical drawings, including the principles of drafting and computer-aided design. Lab fee.

DFTG-1409. Basic Computer Aided Drafting. (4 Credits)
(4-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to computer-aided drafting. Emphasis is placed on setup; creating and modifying geometry; storing and retrieving predefined shapes; placing, rotating, and scaling objects, adding text and dimensions, using layers, coordinate systems, and plot/print to scale. Lab fee.

MCHN-1320. Precision Tools and Measurement. (3 Credits)
(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to the modern science of dimensional metrology. Emphasis on identification, selection and application of various types of precision instruments associated with the machining trade. Practice of basic layout and piece part measurements while using standard measuring tools. Lab fee.

DFTG-2340. Solid Modeling/Design. (3 Credits)
(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A computer-aided modeling course. Development of three-dimensional drawings and models from engineering sketches and orthographic drawings and utilization of three-dimensional models in design work. Lab fee.

MCHN-2335. Advanced CNC Machining. (3 Credits)
(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Advanced CNC operation with an emphasis on programming and operations of machining and turning centers. Lab fee.

WLDG-1521. Welding Fundamentals. (5 Credits)
(5-3-6) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to the fundamentals of equipment used in oxyacetylene and arc welding, including welding and cutting safety, basic oxy acetylene welding and cutting, basic arc welding processes and basic metallurgy. Lab fee.

WLDG-1530. Introduction to Gas Metal Arc Welding (gmaw). (5 Credits)
(5-3-6) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of the principles of gas metal arc welding, setup and use of GMAW equipment and safe use of tools/equipment. Instruction in various joint designs. Lab fee.

WLDG-1353. Intermediate Layout and Fabrication. (3 Credits)
(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An intermediate course in layout and fabrication. Includes design and production of shop layout and fabrication. Emphasis placed on symbols, blueprints, and written specifications. Lab Fees.

WLDG-2435. Advanced Layout and Fabrication. (4 Credits)
This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An advanced course in layout and fabrication. Includes production and fabrication of layout, tools, and processes. Emphasis on application of fabrication and layout skills.

WHAT fabricators DO (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-2)

Fabricators build finished products and the parts that go into them.

duties (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-2)

Assemblers and fabricators typically do the following:

- Read and understand schematics and blueprints
- Position or align components and parts either manually or with hoists
- Use hand tools or machines to assemble parts
- Conduct quality control checks
- Clean and maintain work area and equipment, including tools

Assemblers and fabricators need a range of knowledge and skills. For example, assemblers putting together complex machines must be able to read detailed schematics. After determining how parts should connect, they use hand tools or power tools to trim, cut, and make other adjustments to fit components together. When the parts are properly aligned, they connect them with bolts and screws, or they weld or solder pieces together.

Assemblers look for faulty components and mistakes throughout the assembly process. Such assessments help to ensure quality by allowing assemblers to fix problems before defective products are made.

Modern manufacturing systems use robots, computers, and other technologies. These systems use teams of workers to produce entire products or components.

Assemblers and fabricators may also be involved in product development. Designers and engineers may consult manufacturing workers during the design stage to improve product reliability and manufacturing efficiency. Some experienced assemblers work with designers and engineers to build prototypes or test products.

Although most assemblers and fabricators are classified as team assemblers, others specialize in producing one type of product or in doing the same or similar tasks throughout the manufacturing process.

The following are examples of types of assemblers and fabricators:

Aircraft structure, surfaces, rigging, and systems assemblers fit, fasten, and install parts of airplanes, missiles, or space vehicles. These parts include the wings, landing gear, and heating and ventilating systems.

Coil winders, tapers, and finishers roll wire curs of electrical components used in electric and electronic products, including resistors, transformers, and electric motors. Using hand tools, these workers also attach and trim coils or insulation.

Electrical and electronic equipment assemblers build products such as computers, electric motors, and sensing equipment. Unlike in industries with automated systems, much of the small-scale production of electronic devices for aircraft, military systems, and medical equipment must be done by hand. These workers use devices such as soldering irons.

Electromechanical equipment assemblers make and modify mechanical devices that run on electricity, such as household appliances, computer tomography scanners, and vending machines. These workers use tools such as rulers, rivet guns, and soldering irons.

Engine and machine assemblers construct and rebuild motors, turbines, and machines used in automobiles, construction and mining equipment, and power generators.

Fiberglass laminators and fabricators overlay fiberglass onto molds, forming protective surfaces for boat decks and hulls, golf cart bodies, and other products.

Structural metal fabricators and fitters cut, align, and fit together structural metal parts and may help weld or rivet the parts together.

Team assemblers rotate through different tasks on an assembly line, rather than specializing in a single task. Team members may decide how work is assigned and tasks are completed.

Timing device assemblers, adjusters, and calibrators manufacture or modify instruments that require precise measurement of time, such as clocks, watches, and chronometers.

SUMMARY (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm)

- 2021 Median Pay: $37,170 per year; $17.87 per hour
- Typical Entry-Level Education: High school diploma or equivalent
- Work Experience in a Related Occupation: See How to Become One (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-4)

- On-the-job Training: See How to Become One (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-4)
- Number of Jobs, 2021: 1,821,600
- Job Outlook, 2021-2031: -6% (Decline)
- Employment Change, 2021-2031: -114,900

WORK ENVIRONMENT (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-3)

Most fabricators work in manufacturing plants. Their duties may involve long periods of standing or sitting. Most work full-time, including some evenings and weekends.

HOW TO BECOME A fabricator (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-4)

The education and qualifications typically needed to enter these occupations vary by industry and employer. Although a high school diploma is enough for most jobs, experience and training are needed for advanced assembly work.

PAY (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-5)

The median annual wage for fabricators was $37,170 in May 2021.

JOB OUTLOOK (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-6)

Overall employment of fabricators is projected to decline 6% from 2021 to 2031.

Despite declining employment, about 192,100 openings for fabricators are projected each year, on average, over the decade. All of those openings are expected to result from the need to replace workers who transfer to other occupations or exit the labor force, such as to retire.

STATE & AREA DATA (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-7)

Explore resources for employment and wages by state and area for fabricators.

SIMILAR OCCUPATIONS (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-8)

Compare the job duties, education, job growth, and pay of fabricators with similar occupations.

MORE INFORMATION, INCLUDING LINKS TO O*NET (https://www.bls.gov/ooh/office-and-administrative-support/secretaries-and-administrative-assistants.htm#tab-9)

Learn more about fabricators by visiting additional resources, including O*NET, a source on key characteristics of workers and occupations.

SUGGESTED CITATION:

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Assemblers and Fabricators,
at https://www.bls.gov/ooh/production/assemblers-and-fabricators.htm (visited *May 31, 2023*).

TVCC has partnered with **Career Coach (https://tvcc.emsicc.com/?radius=&region=10%20Mile%20Radius%20from%20Athens%2C%20TX)** for students to discover majors and in-demand careers and education based on your interests!

- Career Assessment Profiler
- Interactive Career Catalog
- Browse TVCC's Pathways

Some careers in this field will require a bachelor's degree.

- TVCC's AA degrees are fully transferable to public universities in Texas. See an academic advisor or TVCC's university transfer webpage (https://www.tvcc.edu/Advisement/Category.aspx?z=72) for more information on this transfer opportunity.
- Many of TVCC's AAS degrees lead to an online Bachelor of Applied Arts and Sciences (BAAS) degree with participating universities. See an academic advisor or the BAAS transfer website (https://www.ntxccc.org/pathways/) for more information on this transfer opportunity.