2023-2024

Robotic & Laser Welding

Associate of Applied Science (AAS) Degree

Technical Credits 52
MnTC General Education Credits..... 15
Total Credits 67

Program Information

The Anoka Technical College Associate of Applied Science (AAS) degree in Robotic and Laser Welding is a 67-credit program designed for individuals seeking a well-rounded welding background. The Welding program consists of technical courses, specifically designed to develop exceptional welding skills utilizing the major welding processes that are vital to industry. This program will train students in fundamentals of ABB, Fanuc and OTC robot programming and language. The laser portion of this program will include development and documentation of procedures and qualification of welds, and the calibration of equipment for welding.

The degree program also offers a balance of general education courses to complement the welding courses and to provide students with opportunity to capitalize on a broad-based welding education. This program requires students to go full-time each semester students are required to take all courses.

Program Learning Outcomes

- Students will weld to visual acceptance criteria per applicable American Welding Society standards in Gas Tungsten Arc Welding, Gas Metal Arc Welding and the Shielded Metal Arc Welding process.
- Students will prepare weld joints and perform welding operations using welding symbol information.
- Students will follow established procedures and policies regarding personal protective gear, shop safety and welding equipment.
- Students will visually examine all work for discontinuities and defects with the knowledge of industry specification.
- Students will work in a team environment and accept constructive criticism.
- Students will operate safely and proficiently using Oxy-fuel, Plasma and Carbon Air Arc equipment.
- Students will demonstrate the ability to weld to entry level standard per American Welding Society on carbon steel, stainless steel, and aluminum.
- Demonstrate ability to operate robots and lasers safely.
- Program robotic and arc welders.
- Develop weld schedules and edit weld programs.
- Program and cut parts using CNC laser cutting equipment.
- Develop laser welding and programs.
- Document results of weld procedure and qualification tests.

Industry and Career Outlook

The diversification of the welding industry impacts virtually every industry around the globe. From the depth of the world's oceans to the far-reaching corners of outer space, there is a welding position for every hardworking, ambitious, smart individual who is ready and willing to constantly improve and strive for excellence. A career choice in welding offers a vast array of options for employment and continuing personal development. Welding is the most common way to permanently join metal parts. Heat is applied to the pieces that are being joined, melting and fusing them together which forms a permanent bond. Therefore, welding plays a key role in industry production lines, laboratories, research and development, national defense, sales and service, NASCAR and drag racing, custom motorcycle building, artwork, sculptures, pipelines, power plants, refineries, construction, maintenance, repair and much more.

Wage information is available from the Minnesota Department of Employment and Economic Development.

Certification

The Welding program not only provides students with a thorough background in welding and related theory, but also prepares students with the knowledge and skills needed to take three national certification examinations:

- American Welding Society's (AWS) Welding Code AWS; and
- Certified Robotic Arc Welding Certification (CRAW)

Program Start Dates

Fall Semester.....August
Spring Semester .....January

Course Prerequisites

Some courses in this program may require a prerequisite. Please see course descriptions for more details.

MnTC General Education Requirements

This program requires completion of the following fifteen credits of general education from at least three goal areas of the Minnesota Transfer Curriculum (MnTC). Refer to the MnTC course list for elective courses:

☐ MATH 1500 Mathematical Ideas (Goal 4) 3
☐ MnTC Electives..... 12

Program Sequence

First Semester *(Basic Welding Certificate)* **17**
☐ WELD 1002 Math for Welders 1
☐ WELD 1004 Oxy-Fuel Applications 1
☐ WELD 1006 Oxy-Fuel Processes 1
☐ WELD 1008 Blueprint Reading I..... 2
☐ WELD 1012 Processes and Power Sources I 3
☐ WELD 1014 Gas Tungsten Arc Welding I 3
☐ WELD 1016 Gas Metal Arc Welding I 3
☐ WELD 1018 Shielded Metal Arc Welding I 3
Second Semester *(Welding Technology Diploma)* **17**
☐ WELD 1022 Blueprint Reading II 3
☐ WELD 1024 Metals Theory I 2
☐ WELD 1026 Processes and Power Source II 3
☐ WELD 1028 Gas Tungsten Arc Welding II 3
☐ WELD 1034 Gas Metal Arc Welding II 3
☐ WELD 1036 Shielded Metal Arc Welding II 3

ANOKA TECHNICAL COLLEGE
A member of Minnesota State

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Third Semester *(Robotic and Laser Welding Certificate)* **18**
- ☐ WELD 2006 Welding Code Interpretation..... 2
- ☐ WELD 2100 Laser Cutting 2
- ☐ WELD 2110 Laser Welding 4
- ☐ WELD 2120 Welding Procedures 1
- ☐ WELD 2130 Fanuc Robotics 3
- ☐ WELD 2140 ABB Robotics..... 3
- ☐ WELD 2150 OTC Robotics 3

Fourth Semester **15**
- ☐ MATH 1500 Mathematical Ideas..... 3
- ☐ MnTC Electives..... 12

Graduation Requirements

Students must earn a cumulative 2.0 GPA or higher to be eligible for graduation from this program.

Faculty Contact

Jay Gerdin 763-576-4055
Rich Godeen..... 763-576-4122
Lisa Glendower..... 763-576-4086

For information on how to apply, to schedule a tour, or for service during summer hours, contact Enrollment Services at 763-576-7710 or EnrollmentServices@anokatech.edu

Also see: Welding Technology diploma, Basic Welding certificate, Robotic and Laser Welding certificate, Welding Fabricator certificate, and Pipe Welder certificate