

Program Number 31-442-1 Technical Diploma • One Term

ABOUT THE PROGRAM

Evidence of welders' work is all around us—everything from battleships, cars, and piping to the amazing dome on the U.S. Capitol Building. If you like hands-on work, have solid math and reading skills, are dedicated to accuracy, and have an eye for detail, welding is the perfect career for you.

PROGRAM OUTCOMES

- Demonstrate industry-recognized safety practices.
- Interpret welding drawings.
- Produce shielded metal arc welds (SMAW).
- Produce gas metal arc welds (GMAW).
- Produce flux core welds.
- Produce gas tungsten arc welds (GTAW).
- Perform thermal cutting.

CAREER AND EDUCATION ADVANCEMENT OPPORTUNITIES

LTC credits transfer to over 30 universities. For more information visit gotoltc.edu/future-students/transfer.

PROGRAM ADMISSIONS STEPS

- Work with Career Coach to:
 - Submit application and \$30 fee.
 - Submit official transcripts (high school and other colleges).

ENROLLMENT PROCESS

After you are admitted to your program you will meet with your Advisor to plan your first semester schedule, review your entire plan of study, and complete any additional enrollment requirements.

- Complete Functional Abilities Statement of Understanding form.
- Meet with your program's advisor.

APPROXIMATE COSTS

- \$140 per credit (resident)
- Other fees vary by program (books, supplies, materials, tools, uniforms, health related exams, etc.) Visit gotoltc.edu/financial-aid/tuition-and-fees for details.

FINANCIAL AID

This program is eligible for financial aid. Visit gotoltc.edu/Financial-Aid or talk with your Career Coach about how to apply for aid.

SPECIAL NOTE

This program is available in a part-time evening and full-time day offering. All classes meet the American Welding Society requirements.

CONTACT

LTC Career Coach
920.693.1162 • CareerCoach@gotoltc.edu

Catalog No.	Class Title	Credit(s)
31442300	Welding Introduction	1
31442304	Welding Submerged Arc (SAW)	1
31442310	Welding Shielded Metal Arc 1A (Stick)	1
31442312	Welding Shielded Metal Arc 1B (Stick)	1
31442314	Welding Shielded Metal Arc 2A (Stick)	1
31442316	Welding Shielded Metal Arc 2B (Stick)	1
31442320	Welding Gas Metal Arc 1A (Wire/Mig)	1
31442322	Welding Gas Metal Arc 1B (Wire/Mig)	1
31442324	Welding Gas Metal Arc 2A (Wire/Mig)	1
31442326	Welding Gas Metal Arc 2B (Wire/Mig)	1
31442382	Welding Math 1	1
31442385	Welding Print Reading	1
31809362	Psychology for Life	1
31442308	Welding Metallurgy	1
31442330	Welding Gas Tungsten Arc 1A (Heli-Arc/TIG)	1
31442332	Welding Gas Tungsten Arc 1B (Heli-Arc/TIG)	1
31442334	Welding Gas Tungsten Arc 2A (Heli-Arc/TIG)	1
31442336	Welding Gas Tungsten Arc 2B (Heli-Arc/TIG)	1
31442340	Welding Advance Process 1A	1
31442342	Welding Advance Process 1B	1
31442357	Welding Fabrication Introduction	2
31442318	Pipe Welding Fundamentals	1
31442350	Welding Hand Tools and Measurement	1
10106116	Computer Essentials	1
31801359	Communication Skills for the Workplace	2

TOTAL 27

*Curriculum and Program Acceptance requirements are subject to change.
Program start dates vary; check with your advisor for details.*



COMMUNICATION SKILLS FOR THE WORKPLACE...prepares the student to develop paper job-search tools and job-related writing skills to increase job stability; introduces the students to team-building skills to resolve organizational problems; introduces the student to the skills of effective listening; prepares the student to respond to workplace criticism and praise; and introduces the student to interpersonal relationship skills, including effective interviewing skills, customer relations, and management/employee relations.

COMPUTER ESSENTIALS...covers computer technology and basic computer skills for the student who is just starting to work with computers. This course will include topics related to uses of computer hardware and software, as well as allowing the students to gain a better understanding of how these components work together.

PIPE WELDING FUNDAMENTALS...demonstrates safe shop working practices. The learner will weld pipe to plate in the 2F, 5F and 6F positions while using the SMAW, GMAW, FCAW and GTAW welding processes. Students will weld pipe groove welds in the 1G, 2G, 5G and 6G positions while using the SMAW, GMAW, FCAW and GTAW welding processes.

PSYCHOLOGY FOR LIFE...prepares the learner to select behavior modification techniques, demonstrate techniques for enhancing memory, analyze expressions of emotion, use conflict for common good, employ techniques to reduce conflict/frustration, use several methods to reduce stress, interpret personality types, ascertain contributors to perception, and apply methods of problem-solving.

WELDING ADVANCE PROCESS 1A...is a student selected welding process. In it the student will begin to use that process to weld in all positions including pipe. The learner will prepare to become a certified welder. COREQUISITE: 31442326 Welding Gas Metal Arc 2B (Wire/MIG) or 31442316 Welding Shielded Metal Arc 2B (stick) or 31442336 Welding Gas Tungsten Arc 2B (Heli-Arc/TIG)

WELDING ADVANCE PROCESS 1B...is a student selected welding process. In it the student will learn to use that process to weld in all positions including pipe. The learner will have the opportunity to become a certified welder in the chosen welding process. COREQUISITE: 31442340 Welding Advance Process 1A

WELDING FABRICATION INTRODUCTION...introduces the learner to various methods of steel fabrication. The learner will produce a steel fabrication from assembly drawings and will produce working drawings to produce their own steel fabrication. The learner will see all aspects of industry design, cut, machine, form, weld, and finish all parts of their steel fabrications including producing a working blueprint. COREQUISITE: 31442385 Welding Print Reading and 31442342 Welding Advance Process 1B or 31442342S3 Welding Advance Process 1B (Stick) or 31442342M3 Welding Advance Process 1B (Mig) or 31442342T3 Welding Advance Process 1B (Heli-Arc/Tig)

WELDING GAS METAL ARC 1A...prepares the learner to demonstrate safe shop work practices; learners will perform set up and shut down of GMAW and FCAW equipment; weld mild steel using the GMAW and FCAW welding processes, and weld in all positions using the GMAW process. COREQUISITE: 31442300 Welding Intro or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

WELDING GAS METAL ARC 1B...will use safe shop work practices while producing 3/4" fillet welds using the FCAW and MCAW welding processes and 1/4" fillet welds while welding tube to plate in the horizontal position. Learners will produce V-groove weldments in all four positions, using .035 hard wire, .052 Flux Core and Metal electrode wires. COREQUISITE: 31442320 Welding Gas Metal Arc 1A (Wire/MIG)

WELDING GAS METAL ARC 2A...will have learners demonstrate safe shop working practices while welding fillet welds in all positions using the FCAW and MCAW welding process. Learners will perform single bevel groove welds and V-groove welds in all positions using the multiple GMAW welding process, and will perform groove welds with and without backing material. COREQUISITE: 31442322 Welding Gas Metal Arc 1B (Wire/MIG)

WELDING GAS METAL ARC 2B...prepares the learner to demonstrate safe shop work practices; make single bevel groove welds in the horizontal, vertical, and overhead positions using 1 inch steel plate, and using .052" flux core electrode wire; make single bevel tee welds in the horizontal position using .052" metal core wire. Learners will be introduced to welding through corners and stager starts and stops. COREQUISITE: 31442324 Welding Gas Metal Arc 2A (Wire/MIG)

WELDING GAS TUNGSTEN ARC 1A...prepares the learner to demonstrate safe shop work practices, weld mild steel, stainless steel and aluminum in the flat position or horizontal positions using the GTAW process. COREQUISITE: 31442300 Welding Intro or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

WELDING GAS TUNGSTEN ARC 1B...prepares the learner to demonstrate safe shop work practices, weld mild steel, stainless steel and aluminum in the horizontal and vertical up positions using the GTAW process, and weld mild steel using the GTAW pulse welding process. COREQUISITE: 31442330 Welding Gas Tungsten Arc 1A (Heli-Arc/TIG)

WELDING GAS TUNGSTEN ARC 2A...prepares the learner to demonstrate safe shop work practices; weld a square butt joint on mild steel in the horizontal, vertical, and overhead positions using the GTAW process; weld a lap joint on mild steel in the horizontal, vertical, and overhead positions using the GTAW process; weld a tee joint on mild steel in the horizontal, vertical, and overhead positions using the GTAW process; and minimize oxidation in metals during welding. COREQUISITE: 31442332 Welding Gas Tungsten Arc 1B (Heli-Arc/TIG)

WELDING GAS TUNGSTEN ARC 2B...prepares the learner to demonstrate safe shop work practices; weld 1/4" mild steel plate in the flat, horizontal, vertical, and overhead positions using the GTAW process; weld multi-pass fillets in 1/4" mild steel plate in the flat position using the GTAW "walking the cup" process; and make corner weldments in mild steel using the GTAW process. COREQUISITE: 31442334 Welding Gas Tungsten Arc 2A (Heli-Arc/TIG)

WELDING HAND TOOLS AND MEASUREMENT...prepares the learner to communicate using proper terminology used in industry, demonstrate safety practices in the work place, demonstrate the use of hand tools, demonstrate the use of power hand tools, demonstrate measurement of steel using measuring tools, classify mechanical fasteners (threaded), install threaded fasteners and other industrial fasteners. COREQUISITE: 31442300 Welding Intro or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

WELDING INTRO...introduces the learner to the world of welding, weld shop safety practices, welding terminology, and welding machine setup to industry standards. Learners will be introduced to the three major welding processes: SMAW, GMAW, and GTAW and will build skills welding with each process in the flat, and horizontal positions while using the common welding joints found in industry. The learner will process material by using the two major hand held cutting processes - the Oxyfuel and PAC cutting processes.

WELDING MATH 1...provides the learner with the necessary skills to solve problems involving whole numbers, fractions, and decimal numbers using pad and pencil and calculator. The course is designed for individualized student needs. This is credit one of the two math credits need for the Welding program.

WELDING METALLURGY...prepares the learner to interpret properties of ferrous materials, heat treat ferrous metals; and test the hardness of ferrous materials. The learner will interpret weld discontinuities and how heat of the weld affects base metal properties.

WELDING PRINT READING...prepares the learner to apply orthographic projection principles and AWS welding symbols as they relate to welding fabrications. Students will learn the basics of print reading including alphabet lines, tolerances, bill of materials, title blocks, and revision blocks.

WELDING SHIELDED METAL ARC 1A...prepares the learner to demonstrate safe shop work practices; make bead on plate welds on mild steel; make padding plate welds on mild steel; make fillet welds in 3/8" mild steel plate in the flat and horizontal positions; and make groove welds in mild steel plate. COREQUISITE: 31442300 Welding Intro or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

WELDING SHIELDED METAL ARC 1B...will have the learner demonstrate safe shop work practices; make horizontal padding plate welds on 1/2" mild steel with E7018 electrode; 1/4", 3/8" and 3/4" fillet welds in the horizontal position, 1/4" fillet welds on round and square tubing; open root groove welds with a 3/32" root opening in mild steel in the 1G position; groove welds with 1/4" root opening and 1/4" backup bar on mild steel in the 2G position using E7018 electrode; padding plates and fillet welds in the vertical position. COREQUISITE: 31442310 Welding Shielded Metal Arc 1A (Stick)

WELDING SHIELDED METAL ARC 2A...will use safe shop work practices so the learner will experience the art of welding in the vertical and overhead position. To gain an understanding of the vertical and overhead positions, you will perform padding plate welds on mild steel with E7018 electrode; perform fillet welds in the vertical, overhead and 5F positions; groove welds will also be performed in the vertical and overhead position. Groove welds will be with and without backing. COREQUISITE: 31442312 Welding Shielded Metal Arc 1B (Stick)

WELDING SHIELDED METAL ARC 2B...prepares the learner to demonstrate safe shop work practices while making multi pass groove welds in single beveled plate in the 1G, 3G, and 4G positions using E7018 electrode. You will make multi pass fillet welds to pipe to plate in the 2F and 5F positions. You will be introduced to pipe welding in the 1G and 2G positions. COREQUISITE: 31442314 Welding Shielded Metal Arc 2A (Stick)

WELDING SUBMERGED ARC (SAW)...is a common arc welding process. It requires a continuously fed consumable electrode. The molten weld and the arc zone are protected from atmospheric contamination by being "submerged" under a blanket of granular fusible flux. The learner will interpret SAW terminology, setup and shut down of SAW equipment, SAW weld safety; and perform SAW welds in the flat position. COREQUISITES: 31442326 Welding Gas Metal Arc 2B and 31442300 Welding Intro or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding