Learning About the Welding Job Market in the Southeast Wisconsin Region

Prepared by the University of Wisconsin-Milwaukee Employment and Training Institute for the WOW Workforce Investment Board, Inc. and the Regional Workforce Alliance
Learning About the Welding Job Market

Welding jobs are in demand.

$12.22: Starting wage for welders

$18.53: For experienced welders

Local Job Outlook

To help you plan for jobs of today and the future, we regularly contact employers in Southeast Wisconsin to find out what kinds of jobs and what levels of education, training and experience are required. This report gives you a “snapshot” of welding jobs available now and in the future in the seven counties of Southeast Wisconsin – Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha counties.

This is an exciting time to think about careers. Many area companies are looking for new workers to replace those who are retiring and to meet expansion needs. While it is possible to find a welding job right out of high school, you will have a greater choice of careers and higher pay if you complete technical college training. In the welding field you have the opportunity to start as an entry level worker and with more experience advance to very difficult types of welds with average salaries of $50,000 or more.
Welders are working throughout the region. At the time of the 2000 U.S. Census, about half of all welding jobs were located in Milwaukee County, 31 percent were in the WOW (Waukesha, Ozaukee and Washington) counties, and 20 percent were in Racine, Kenosha and Walworth counties.

![Number of Welding Jobs in Southeast Wisconsin by County: 2000 Census](chart)

Jobs for welders, cutters and welding machine operators are expected to increase five percent in the next 10 years. Openings for welders in the seven-county Southeast Wisconsin region will occur mainly due to the retirement of current workers. While some welding jobs will be eliminated by automated systems, manual welders with a wide variety of skills will still be needed for metal fabrication, maintenance, repair and other work in manufacturing.

![MATC instructor Larry Gross demonstrates robot welding system to a student at the West Allis campus.](photo)

Photo: MATC/Sue Ruggles
In December 2007 the University of Wisconsin-Milwaukee Employment and Training Institute conducted a targeted survey of fabricated metal product manufacturing firms and larger manufacturing companies. For this survey fifty employers reported a need to hire 228 welders within the next six months and another 142 welders in the year following. The types of welders needed by these companies are listed below.

### Anticipated Openings for Welders in Southeast Wisconsin

(50 Companies Reporting Welder Openings)

<table>
<thead>
<tr>
<th>Anticipated Openings</th>
<th>Nov-Dec 2007</th>
<th>Jan-June 2008</th>
<th>July-Dec 2008</th>
<th>Jan-June 2009</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiG welder</td>
<td>19</td>
<td>63</td>
<td>16</td>
<td>12</td>
<td>110</td>
</tr>
<tr>
<td>Flux cored arc welder</td>
<td>4</td>
<td>25</td>
<td>20</td>
<td>19</td>
<td>68</td>
</tr>
<tr>
<td>TIG welder</td>
<td>6</td>
<td>20</td>
<td>13</td>
<td>4</td>
<td>43</td>
</tr>
<tr>
<td>Set up welder</td>
<td>7</td>
<td>16</td>
<td>6</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Welder fabricator</td>
<td>5</td>
<td>11</td>
<td>7</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>MIG/TIG/flux cored arc</td>
<td>5</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Welder fitter</td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Spot welder</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>MIG/TIG</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Production welder</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>MIG/flux cored arc</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Welder burner</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Plate and weld inspector</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Pipe welder</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Finish welder</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other:</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL WELDERS</strong></td>
<td><strong>56</strong></td>
<td><strong>172</strong></td>
<td><strong>83</strong></td>
<td><strong>59</strong></td>
<td><strong>370</strong></td>
</tr>
</tbody>
</table>

Categories of welders are identified based on the official American Welding Society (AWS) definitions of the processes: Gas Metal Arc Welding – GMAW (previously known as Metallic Inert Gas-MIG), Gas Tungsten Arc Welding – GTAW (previously known as Tungsten Inert Gas-TIG), and Flux Cored Arc Welding-FCAW. For more background on welding careers, go to the American Welding Society website at [www.aws.org/w/a/education/career.html](http://www.aws.org/w/a/education/career.html).
Along with the ability to complete welding tasks, all employers are looking for applicants with good work habits and ability to follow instructions. Many of the openings require technical college training and certification, and often 1 to 3 years of welding experience is specified. The locations reported by surveyed companies for recent and current job openings are shown on the map below.

**Snapshot of Job Openings for Welders in Southeast Wisconsin**
(50 companies reporting openings for Nov. 2007 – June 2008)

Some companies will hire and train their own welders on the job while others will only hire experienced welders or those with certification. The education levels of welders currently employed in the region show that the opportunities for those with less education are limited. Most welders are high school graduates (76%) and 28% have some college or a college associate degree. Only 24% of current welders did not complete high school.

Welding jobs titles and skill levels are determined based on your ability to demonstrate specific proficiencies when tested. Certification of advanced skills is a commonly accepted way of documenting your ability to perform welds as specified by welder classification. Gateway Technical College, Milwaukee Area Technical College, Moraine Park Technical College, and Waukesha County Technical College offer welder training and certification programs for entry level to advance training, and some with a special emphasis. Most of the technical college programs are running at full capacity and some are planning for expansion.
In a two-semester college diploma program, you will learn to set up and operate welding equipment, read blueprints, and help maintain welding equipment for manufacturing and construction industries. Short term certificate programs provide an introduction to types of welds. In some cases the employer will conduct the necessary training on the job. Technical training in welding offers job mobility into a number of occupations.

### Welding Job Mobility (from Gateway Technical College)

**Concurrent Occupations for welding program students:**
1. Chipper
2. Tacker
3. Welder’s Helper
4. Production Welder

**Occupations for Technical Diploma Graduates:**
1. Arc Welder
2. Production Welder
3. Tig Welder
4. Mig Welder
5. Oxy-Acet Welder

**Advanced Occupations for Technical Diploma graduates with extra training or experience:**
1. Apprentice Welder
2. Certified Welder
3. Shop Welder
4. Combination Welder
5. Weld Supervisor
6. Set-Up Welder
7. Welding Inspector
8. Welding Technician

**Occupation for those with higher level degrees (such as bachelor’s degree):**
1. Welding Engineer
2. Welding Instructor
3. Welding Technician

Source: Gateway Technical College curriculum at www.gtc.edu/docs/curriculumSheets/31-442-1C.pdf.

Test candidate Roger Bratberg takes the performance component of the Certified Robotic Arc Welding (CRAW) exam at the MATC.

Photo: MATC/Sue Ruggles.
Acquiring welding skills can open doors to other careers as well as increased wages. Listed below are jobs and pay levels for occupations which require some welding experience.

Other Careers Requiring Welding Skills *(from the U.S. Department of Labor)*

<table>
<thead>
<tr>
<th>Occupational Title</th>
<th>Average Annual Salary</th>
<th>Relevance Score on Importance of Welding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural metal fabricators and fitters</td>
<td>$35,011</td>
<td>33</td>
</tr>
<tr>
<td>Sheet metal workers</td>
<td>$52,041</td>
<td>32</td>
</tr>
<tr>
<td>Plumbers, pipefitters, and steamfitters</td>
<td>$61,016</td>
<td>24</td>
</tr>
<tr>
<td>Structural iron and steel workers</td>
<td>$52,649</td>
<td>24</td>
</tr>
<tr>
<td>Industrial machinery mechanics</td>
<td>$46,863</td>
<td>22</td>
</tr>
</tbody>
</table>

*MATC welding instructor Peter Stojanovich demonstrates welding techniques on a race car chassis.*

Photo: MATC/Sue Ruggles
Using the Internet to Learn About Careers in Welding

The Wisconsin technical colleges have information available at their campuses and on their websites about courses in welding, requirements for diploma and certificate programs, and resources about welding careers. (Sample websites are shown in the pages below.)

Gateway Technical College (www.gtc.edu)

<table>
<thead>
<tr>
<th>Kenosha Campus</th>
<th>Elkhorn Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact:</td>
<td>Contact:</td>
</tr>
<tr>
<td></td>
<td>Kenneth Karwowski <a href="mailto:karwowskik@gtc.edu">karwowskik@gtc.edu</a></td>
</tr>
<tr>
<td>Location:</td>
<td>Location:</td>
</tr>
<tr>
<td>3520 30th Avenue, Kenosha, WI 53144</td>
<td>400 County Road H, Elkhorn, WI 53121</td>
</tr>
<tr>
<td>Enrollment:</td>
<td>Enrollment:</td>
</tr>
<tr>
<td>10 sessions are offered with a capacity of 16 per session; 4 sessions are held in both the a.m. and p.m.; 2 sessions are held on Friday night and Saturday.</td>
<td>56 in evening sessions; 20 in daytime sessions</td>
</tr>
<tr>
<td>Capacity:</td>
<td>Capacity:</td>
</tr>
<tr>
<td>160</td>
<td>76</td>
</tr>
</tbody>
</table>

Useful starting website: www.gtc.edu/pages/displayProgram.asp?pid=30-442-2

Milwaukee Area Technical College (www.matc.edu)

| Contact:       | KoehlerM@matc.edu |
| Location:      | Downtown Milwaukee Campus (700 West State Street, Milwaukee, WI 53233) |
|                | West Allis Campus (1200 South 71st Street, West Allis, WI 53214) |
|                | Oak Creek Campus (6665 South Howell Avenue, Oak Creek, WI 53154) |
| Capacity:      | 80 (20 per session, morning and afternoon at the Downtown Milwaukee Campus and West Allis Campus; 12 at Oak Creek Campus. |

Useful starting website: www.matc.edu/documents/catalog/welding_technical_diploma.html

Moraine Park Technical College (www.wptc.edu)

| Contact:       | Larry Clark lclark@morainepark.edu |
| Location:      | Beaver Dam Campus (700 Gould Street, Beaver Dam, WI 53916) |
|                | Some introductory apprentice courses are held at the Fond du Lac Campus (235 N. National Avenue, Fond du Lac, WI 54936) |
| Enrollment:    | Two sections are offered: 1 in the evening, 1 during the day. Sessions start quarterly throughout the regular school year. |
| Capacity:      | 28 (14 in each section) |

Useful starting website: www.morainepark.edu/pages/441.asp

Waukesha County Technical College (www.wctc.edu)

| Contact:       | Michael Shiels, mshiels@wctc.edu |
| Location:      | Main Campus, 800 Main Street, Pewaukee, WI 53072 |
| Capacity:      | 40 |

Useful starting website: www.wctc.edu/web/areas/trades/welding/welding.php
Manufacturing, Engineering, and Maintenance

Welding

A talented welder can always find well-paying work in a variety of industries. Gateway Technical College provides two technical diplomas that ensure you get the best of industry knowledge and can hit the workforce with the talent you need and the salary you want.

Gateway’s Welding program provides flexible scheduling, multiple start dates, and is student-friendly. It includes extensive hands-on activity in lab provided by knowledgeable instructors with years of actual in-the-field experience.

Visit the Welding website.

Register for classes.

Classes available this fall:
(Click the Course Number for an explanation. For information regarding class days, times, and spaces available, click here.)
- 442-101 Welding Basics
- 442-102 Introduction to Welding
- 442-300 Metal Fabrication I
- 442-314 Welding Fundamentals
- 442-321 Welding & Gas Metal Arc Welding
- 442-322 Welding & Shielded Metal Arc Welding
- 442-323 Welding & Gas Tungsten Arc Welding
- 442-324 Weld Print Reading and Fabrication Procedures
- 442-329 Welding & Advanced Oxyacetylene
- 442-330 Welding & Advanced Shielded Metal Arc Welding
- 442-333 Welding & Advanced Gas Tungsten Arc Weld
- 442-334 Welding & Oxyacetylene
- 442-342 Welding & Pipe Oxyacetylene Fitting
- 442-343 Welding & Pipe Shielded Metal Arc Welding
- 442-346 Welding & Pipe Shielded Metal Arc Certification
- 442-347 Welding & Pipe Gas Tungsten Arc Welding
- 442-348 Welding & Pipe Gas Tungsten Arc Certification
- 442-407 Industrial Welding
- 442-410 Welding for Sheet Metal
- 442-624 Art of Welding/Advanced

Program Courses

List of degrees, diplomas or certificates available in this program area:

WELDING/MAINTENANCE & FABRICATION – Technical Diploma
WELDING – Technical Diploma

Certificates Available:
OXY/FUEL WELDING
ADV. OXY/FUEL WELDING
PIPE/OXY/FUEL WELDING
GMAW WELDING
ADV. GMAW WELDING
PIPE GMAW WELDING
SNOW WELDING
ADV. SNOW WELDING
PIPE SNOW WELDING
PIPE SNOW CERT.
GTAW WELDING
ADV. GTAW WELDING
PIPE GTAW WELDING
PIPE GTAW CERT.
WELD PRINTREADING AND FABRICATION PROCEDURES
WELDING BASICS
WELDING FUNDAMENTALS

Job/Salary & Outlook

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Job:
Welder/Cutter/Fabricator
Salary: $10.16 - $48.00

Job:
Welder/Cutter/Fabricator
Outlook: Excellent - Huge shortage of welders/cutters/fabricators

Job:
Welder/Cutter/Fabricator
Description: Cut/fabricate/weld to assemble various components from a variety of metals

Note that there is a Robotics Option offered on the Elkhorn Campus within the Welding technical diploma.
Welding

Technical Diploma — Downtown Milwaukee and West Allis Campuses

Program code: 31-442-1

This curriculum goes into effect starting with the summer 2008 semester.

This page was last updated in July 2007.

Overview — Welding is a two-semester technical diploma program designed to prepare you to perform production, maintenance and repair welding in the manufacturing and construction industries.

Career Outlook — There is an increasing demand for welders having current industry skills. Advances in welding and related processes create opportunities in manufacturing and construction.

Career Preparation and Expected Learning Outcomes — Program graduates will have skills for employment. Employers will expect you to:

- Maintain good attendance
- Practice industry safety standards
- Set up and operate all welding and related equipment
- Troubleshoot and maintain equipment
- Utilize math and blueprint-reading skills
- Communicate effectively
- Abide by daily work routines and regulations, and work cooperatively with co-workers
- Follow instructions and work with minimal supervision
- Have pride in workmanship
- Have a good work ethic

Preparation for Admission — The following are required for admission to the program:

Rapid Response

New Certificate Leads to Jobs in Heavy-Plate Welding

A new welding certificate offered by Milwaukee Area Technical College creates a launching pad to customized welder training and jobs at heavy manufacturers such as Bucyrus International, Inc. of South Milwaukee. MATC developed the program on a fast track as a result of discussions with CEOs who reported having trouble finding enough welders with the right skills for their specialized needs.

The intensive, 12-week, 350-hour training program leads to a certificate in flux core welding. To qualify, students need to achieve Accuplacer test scores of 55 in reading, 60 in writing and 36 in math. Also, students must have taken Welding 325 and 327; or have two years' industry experience in gas metal arc welding; or be state certified in structural welding.

Classes start March 21. Tuition cost for the 11-credit sequence is $968. For more information, please contact: Larry Gross, welding instructor, (414) 456-5454; or Tom Wichert, program counselor, (414) 456-5451.
Welding

Technical Diploma: 31-442-1
Campus: Beaver Dam

Moraine Park's two-semester Welding technical diploma helps individuals develop welding and fabrication skills that are used in today's industries. Students gain skills in all position welding that can lead to welder certification through hands-on experience in a welding laboratory. Students learn gas metal arc welding, shielded metal arc welding, gas tungsten arc welding, and oxy-fuel cutting welding. The course also provides instruction in print reading, math, and communications skills.

This program is a nontraditional occupation for women.

Curriculum

2007-2008

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>421-331</td>
<td>Welding Print Reading</td>
<td>2</td>
</tr>
<tr>
<td>442-309</td>
<td>Introduction to Welding Processes</td>
<td>4</td>
</tr>
<tr>
<td>442-310</td>
<td>Shielded and Gas Metal Arc Welding (SMAW/GMAW)</td>
<td>4</td>
</tr>
<tr>
<td>443-316</td>
<td>Gas Tungsten Arc Welding</td>
<td>4</td>
</tr>
<tr>
<td>442-318</td>
<td>Advanced Welding Techniques</td>
<td>2</td>
</tr>
<tr>
<td>442-345</td>
<td>Fabrication for Welders</td>
<td>1</td>
</tr>
</tbody>
</table>

Technical Support Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>890-125</td>
<td>Student Success</td>
<td>1</td>
</tr>
</tbody>
</table>

Total: 28

A Welding Exit Assessment (957-153) is a graduation requirement for this program.

Electronic Resources

Welding Research Guide

This guide will help the user locate books, electronic books, audiostream resources, journal articles, and Internet resources related to welding. This guide serves as a starting point for finding information on topics related to welding, methods of welding, welding standards, and job outlook for welders. If you would like additional assistance, please ask the librarians or call 920-924-3108 or 262-335-5760 or 920-887-6496.

Books, e-books, and Audiostream Resources:

Use MPTC Online Catalog to locate books, e-books, and audiostream materials on the topics related to welding.

To access the e-books (electronic books), click on Net Library. (Use search terms suggested below)

Suggested keyword searches for topics related to welding:

Welding and manufacturing processes
Welding and safety measures
Welding types (Arc, Tig, Mig, Plasma, Ultrasonic, Laser, Oxyacetylene)
Solder and soldering

Certifications and Licensure

Welding Certification

The Certified Welding Inspector at our Beaver Dam facility has the credentials to certify welders in most available welding codes. Weld certification tests can be performed in our lab or arrangements can be made to test at a company site. We offer our program students one certification test as part of our advanced Welding course. State of Wisconsin tests are conducted once a month. Click on the following link for the current schedule of State of Wisconsin Structural Steel tests.

For a more detailed overview or a price quote, please contact Marcia Arndt.
**Waukesha County Technical College**

**Areas of Study**
- Admissions
- Registration & Course Information
- Financial Aid & Scholarships
- Student Services
- Career Services
- Academic Skill Building
- Business Services
- General WCTC Information
- My WCTC

**Metal Fabrication/Welding**

**About the Program**

30-credit technical diploma

Develop skills in interpreting blueprints, creating the exact shape of a part for cutting, fabrication and welding, and producing quality parts through the use of different techniques and materials. Learn to program and operate computer-controlled press brakes and shears, plasma arc cutting machines and microprocessor-based power sources. Welding techniques and joining methods are emphasized throughout the program.

Graduates may work in positions such as fabricator, laser operator, welder or welder/project operator.

**Employment Outlook**

**Average salary of recent graduates**:

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Average Salary</th>
<th>Median Salary</th>
<th>Average Hourly Wage</th>
<th>Average Entry-Level Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20,000-$50,000</td>
<td>$36,862</td>
<td>$32,280</td>
<td>$14.96</td>
<td>$34,190</td>
</tr>
</tbody>
</table>

**Required Courses**

**First Semester**

<table>
<thead>
<tr>
<th>Course Num</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>457-310</td>
<td>Blueprint Reading - Fab</td>
<td>2</td>
</tr>
<tr>
<td>457-320</td>
<td>Thermal Cutting Processes</td>
<td>2</td>
</tr>
<tr>
<td>457-360</td>
<td>Metal Fabrication - Welding I</td>
<td>4</td>
</tr>
<tr>
<td>457-360</td>
<td>Metal Fabrication I</td>
<td>5</td>
</tr>
<tr>
<td>605-304</td>
<td>Industrial Math I</td>
<td>2</td>
</tr>
<tr>
<td>605-345</td>
<td>Basic Workplace Psychology</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Semester Credits**

16

**Second Semester**

<table>
<thead>
<tr>
<th>Course Num</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>422-303</td>
<td>Metal Fabrication</td>
<td>1</td>
</tr>
<tr>
<td>457-321</td>
<td>Thermal Cutting Processes II</td>
<td>2</td>
</tr>
<tr>
<td>457-365</td>
<td>Metal Fabrication II</td>
<td>4</td>
</tr>
<tr>
<td>457-365</td>
<td>Metal Fabrication II</td>
<td>5</td>
</tr>
<tr>
<td>801-311</td>
<td>Communication in the Workplace</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total Semester Credits**

14

* (Prerequisites or substitutes may apply to this class. Click on course title for specific information.)
Jessica Cooper is trained in a welding program partnership involving Milwaukee Area Technical College, Genesis High School, and Tramont Corporation.

Photo: MATC/Sue Ruggles

This booklet was prepared by the University of Wisconsin-Milwaukee Employment and Training Institute for the WOW Workforce Investment Board, Inc. and the Regional Workforce Alliance under a WIA Incentive grant to RWA from the Wisconsin Department of Workforce Development. We appreciate the assistance provided by the Gateway Technical College, Milwaukee Area Technical College, Moraine Park Technical College, and Waukesha County Technical College, and the 169 employers participating in the December 2007 targeted survey of welder job openings and assessment of need.