



## **TEKS CORRELATIONS & SUGGESTED PACING GUIDE**

### Introduction to Welding



**iCEV Architecture, Construction, Transportation &  
Manufacturing Site**

***Meets 100% of TEKS***

**218 days of teaching material**

Scope & Sequence	Lesson Title	TEKS	Days of Teaching
1	Welding Shop Safety	3.A.i; 3.B.i; 3.B.ii; 3.C.i; 3.D.i; 7.B.i	8
2	Welding Blueprints & Symbols	4.A.i; 4.B.i; 5.B.i	7
3	Mathematics in Welding	5.A.i; 5.E.i; 5.E.ii; 5.E.iii; 5.E.iv; 5.F.i	10
4	Measurement in Construction	5.C.i; 5.D.i; 5.G.i	10
5	Introduction to Metals	6.D.i; 7.E.i	7
6	Welding Inspection & Testing	3.A.i; 6.B.i; 7.B.i	7
7	Shielded Metal Arc Welding: Preparation & Safety	6.C.i; 8.A.i; 8.B.i; 8.C.i; 8.D.i; 8.E.i; 8.F.i; 8.G.i	7
8	Shielded Metal Arc Welding: 6010 Electrodes	8.F.i	7
9	Shielded Metal Arc Welding: 7018 Electrodes	8.F.i	7
10	Shielded Metal Arc Welding: AWS EDU-6 Entry Level Welder Qualification Test	6.B.i	8
11	Oxy-Acetylene Welding: Safety & Introduction	7.A.i	3
12	Oxy-Fuel Welding & Brazing	6.C.i; 7.A.i; 7.B.i; 7.C.i; 7.D.i; 7.F.i	8
13	Oxy-Fuel Cutting	7.E.i; 7.F.i	6
14	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance	9.A.i; 9.C.i; 9.D.i	5
15	Gas Metal Arc Welding: Carbon Steel	9.B.i; 9.E.i; 9.E.ii	10
16	Gas Metal Arc Welding: Aluminum	9.B.i; 9.E.i; 9.E.ii	8
17	Gas Metal Arc Welding: Sheet Metal	9.B.i; 9.E.i; 9.E.ii	8
18	Gas Metal Arc Welding: Stainless Steel	9.B.i; 9.E.i; 9.E.ii	8
19	Skills for Real World Survival	1.B.ii; 1.C.i	13
20	Jobs, Careers & Education	2.D.i	10
21	Introduction to Professional Communication	1.A.i; 1.A.ii; 2.E.i	5
22	Written Communication Practices	1.A.i	15
23	Employability Skills	1.B.i; 1.B.ii; 1.C.i; 1.C.ii; 1.D.i; 1.E.i; 1.E.ii; 1.F.i; 1.F.ii; 1.F.iii; 1.H.i; 1.H.ii; 2.C.i; 2.E.i	5
24	Graduate Tips & Advice: Importance of Work Ethic	1.B.ii; 1.C.ii; 1.D.i	2
25	Management of Energy, Money & Tasks	1.H.i; 1.H.ii	6
26	Formulas for Career Success: Higher Learning	2.A.i; 2.A.ii	7
27	Virtual Job Descriptions for Welding	6.A.i	1
28	Safe Working Environment	1.G.i; 2.F.i; 2.F.ii; 2.F.iii; 2.F.iv; 3.E.i; 3.E.ii	3
29	Workplace Issues	1.G.i; 2.F.i; 2.F.ii; 2.F.iii; 2.F.iv; 3.E.i; 3.E.ii	4
30	Business Ethics	1.C.ii; 1.D.i	3
31	Ethics in Business	1.C.ii; 1.D.i	6
32	Customer Satisfaction	2.B.i	4

## Correlations to the Texas Essential Knowledge and Skills (TEKS): Student/Teacher Material

<b>Subject</b>	<b>Chapter 130. Texas Essential Knowledge and Skills for Career &amp; Technical Education</b>
<b>Subchapter</b>	<b>Subchapter M. Manufacturing</b>
<b>Course</b>	<b>§130.362. Introduction to Welding (One Credit), Adopted 2015.</b>
<b>Publisher</b>	<b>CEV Multimedia, Ltd.</b>
<b>Program Title</b>	<b>iCEV Architecture, Construction, Transportation &amp; Manufacturing Site</b>
<b>Program ISBN</b>	<b>9781614592105</b>
<b>TEKS Coverage (%)</b>	<b>100.00%</b>

(a) General Requirements. This course is recommended for students in Grades 9-12. Recommended prerequisite or corequisite: Algebra I. Students shall be awarded one credit for successful completion of this course.

### (b) Introduction.

- (1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
- (2) The Manufacturing Career Cluster focuses on planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering.
- (3) Introduction to Welding will provide an introduction to welding technology with an emphasis on basic welding laboratory principles and operating procedures. Students will be introduced to the three basic welding processes. Topics include: industrial safety and health practices, hand tool and power machine use, measurement, laboratory operating procedures, welding power sources, welding career potentials, and introduction to welding codes and standards. Introduction to Welding will provide students with the knowledge, skills, and technologies required for employment in welding industries. Students will develop knowledge and skills related to welding and apply them to personal career development. This course supports integration of academic and technical knowledge and skills. Students will reinforce, apply, and transfer knowledge and skills to a variety of settings and problems. Knowledge about career opportunities, requirements, and expectations and the development of workplace skills will prepare students for future success.
- (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
- (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

### (c) Knowledge and Skills.

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) express ideas to others in a clear, concise, and effective manner through written and verbal communication	(i) express ideas to others in a clear, concise, and effective manner through written communication	Student/Teacher	Narrative	9781614592105	Written Communication Practices	
			Student/Teacher	Activity	9781614592105	Activity - Blog; Project - Informative Pamphlet	Written Communication Practices
			Student/Teacher	Narrative	9781614592105	Introduction to Professional Communication	
			Student/Teacher	Activity	9781614592105	Project - Memo	Introduction to Professional Communication
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) express ideas to others in a clear, concise, and effective manner through written and verbal communication	(ii) express ideas to others in a clear, concise, and effective manner through verbal communication	Student/Teacher	Narrative	9781614592105	Introduction to Professional Communication	
			Student/Teacher	Activity	9781614592105	Activity - Interview; Activity - Script; Activity - Talking Stick Teacher Instruction Sheet	Introduction to Professional Communication

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate acceptable work ethics in reporting for duty and performing assigned tasks as directed	(i) demonstrate acceptable work ethics in reporting for duty	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Project - Personal Skills; Project - Interview	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate acceptable work ethics in reporting for duty and performing assigned tasks as directed	(ii) demonstrate acceptable work ethics in performing assigned tasks as directed	Student/Teacher	Narrative	9781614592105	Graduate Tips & Advice: Importance of Work Ethic	
			Student/Teacher	Activity	9781614592105	Project - Real Life Work Ethic	Graduate Tips & Advice: Importance of Work Ethic
			Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Project - Interview	Employability Skills
			Student/Teacher	Narrative	9781614592105	Skills for Real World Survival	
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) conduct oneself in a manner acceptable for the profession and work site such as suitable dress and polite speech	(i) conduct oneself in a manner acceptable for the profession	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Project - Interview	Employability Skills
			Student/Teacher	Narrative	9781614592105	Skills for Real World Survival	
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) conduct oneself in a manner acceptable for the profession and work site such as suitable dress and polite speech	(ii) conduct oneself in a manner acceptable for the work site	Student/Teacher	Narrative	9781614592105	Business Ethics	
			Student/Teacher	Activity	9781614592105	Project - Ethics at Work Teacher Instruction Sheet	Business Ethics
			Student/Teacher	Narrative	9781614592105	Ethics in Business	
			Student/Teacher	Activity	9781614592105	Activity - Ethics Role Play; Activity - Ethics Role Play Teacher Instruction Sheet; Project - Code of Ethics; Project - Unethical Case Study	Ethics in Business
			Student/Teacher	Narrative	9781614592105	Employability Skills; Graduate Tips & Advice: Importance of Work Ethic	PLEASE NOTE: Due to space limitations, more than one narrative correlation lesson is listed on this line. Several lessons and corresponding activities satisfy this standard.

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) choose ethical courses of action such as following applicable rules, laws, and regulations	(i) choose ethical courses of action	Student/Teacher	Narrative	9781614592105	Business Ethics	
			Student/Teacher	Activity	9781614592105	Project - Ethics at Work Teacher Instruction Sheet	Business Ethics
			Student/Teacher	Narrative	9781614592105	Ethics in Business	
			Student/Teacher	Activity	9781614592105	Activity - Ethics Role Play; Activity - Ethics Role Play Teacher Instruction Sheet; Project - Code of Ethics; Project - Unethical Case Study	Ethics in Business
			Student/Teacher	Narrative	9781614592105	Employability Skills; Graduate Tips & Advice: Importance of Work Ethic	PLEASE NOTE: Due to space limitations, more than one narrative correlation lesson is listed on this line. Several lessons and corresponding activities satisfy this standard.
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review detailed aspects of both quantitative and qualitative work processes and end products	(i) review detailed aspects of both quantitative and qualitative work processes	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Critical & Creative; Activity - Critical & Creative Answer Key; Activity - Problem Solving; Activity - Problem Solving Answer Key; Activity - Work Habits: Good vs. Bad; Activity - Work Habits: Good vs. Bad Answer Key	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review detailed aspects of both quantitative and qualitative work processes and end products	(ii) review detailed aspects of both quantitative and qualitative end products	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Critical & Creative; Activity - Critical & Creative Answer Key; Activity - Problem Solving; Activity - Problem Solving Answer Key; Activity - Work Habits: Good vs. Bad; Activity - Work Habits: Good vs. Bad Answer Key	Employability Skills

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) evaluate systems relative to causes, problems, and patterns to improve operational situations	(i) evaluate systems relative to causes to improve operational situations	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Critical & Creative; Activity - Critical & Creative Answer Key; Activity - Problem Solving; Activity - Problem Solving Answer Key; Activity - Work Habits: Good vs. Bad; Activity - Work Habits: Good vs. Bad Answer Key	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) evaluate systems relative to causes, problems, and patterns to improve operational situations	(ii) evaluate systems relative to problems to improve operational situations	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Critical & Creative; Activity - Critical & Creative Answer Key; Activity - Problem Solving; Activity - Problem Solving Answer Key; Activity - Work Habits: Good vs. Bad; Activity - Work Habits: Good vs. Bad Answer Key	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) evaluate systems relative to causes, problems, and patterns to improve operational situations	(iii) evaluate systems relative to patterns to improve operational situations	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Critical & Creative; Activity - Critical & Creative Answer Key; Activity - Problem Solving; Activity - Problem Solving Answer Key; Work Habits: Good vs. Bad; Work Habits: Good vs. Bad Answer Key	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) adhere to business practices such as policies, procedures, and health and safety rules	(i) adhere to business practices	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Defining Workplace Policies & Procedures	Workplace Issues

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) use time wisely by prioritizing tasks and following schedules in an efficient manner	(i) use time wisely by prioritizing tasks	Student/Teacher	Narrative	9781614592105	Managing of Energy, Money & Tasks	
			Student/Teacher	Activity	9781614592105	Project - Managing Tasks	Managing of Energy, Money & Tasks
			Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Skills Flashcards	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) use time wisely by prioritizing tasks and following schedules in an efficient manner	(ii) use time wisely by following schedules in an efficient manner	Student/Teacher	Narrative	9781614592105	Managing of Energy, Money & Tasks	
			Student/Teacher	Activity	9781614592105	Project - Managing Tasks	Managing of Energy, Money & Tasks
			Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Skills Flashcards	Employability Skills
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(A) determine academic knowledge and skills required for postsecondary education	(i) determine academic knowledge required for postsecondary education	Student/Teacher	Narrative	9781614592105	Formulas for Career Success: Higher Learning	
			Student/Teacher	Activity	9781614592105	Activity - Opportunities to Earn Credit; Activity - What I Need to Know; Project - Preparatory Journal	Formulas for Career Success: Higher Learning
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(A) determine academic knowledge and skills required for postsecondary education	(ii) determine academic skills required for postsecondary education	Student/Teacher	Narrative	9781614592105	Formulas for Career Success: Higher Learning	
			Student/Teacher	Activity	9781614592105	Activity - Opportunities to Earn Credit; Activity - What I Need to Know; Project - Preparatory Journal	Formulas for Career Success: Higher Learning
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(B) identify employers' expectations to foster positive customer satisfaction	(i) identify employers' expectations to foster positive customer satisfaction	Student/Teacher	Narrative	9781614592105	Customer Satisfaction	
			Student/Teacher	Activity	9781614592105	Activity - Customer Satisfaction; Activity - Customer Satisfaction Teacher Instruction Sheet; Activity - Customer Service Scripts; Project - Customer Service Policies	Customer Satisfaction

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(C) demonstrate the professional standards required in the workplace such as interviewing skills, flexibility, willingness to learn new skills and acquire knowledge, self-discipline, self-worth, positive attitude, and integrity in a work situation	(i) demonstrate the professional standards required in the workplace	Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Activity - Skills Flashcards; Project - Interview; Project - Personal Skills	Employability Skills
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(D) evaluate progress toward personal career goals	(i) evaluate progress toward personal career goals	Student/Teacher	Narrative	9781614592105	Jobs, Careers & Education	
			Student/Teacher	Activity	9781614592105	Project - Career Plan Timeline	Jobs, Careers & Education
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(E) communicate effectively with others in the workplace to clarify objectives	(i) communicate effectively with others in the workplace to clarify objectives	Student/Teacher	Narrative	9781614592105	Introduction to Professional Communication	
			Student/Teacher	Activity	9781614592105	Activity - Interview; Activity - Script; Project - Memo	Introduction to Professional Communication
			Student/Teacher	Narrative	9781614592105	Employability Skills	
			Student/Teacher	Activity	9781614592105	Project - Interview	Employability Skills
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(F) apply knowledge and skills to health and safety in the workplace as specified by appropriate governmental regulations	(i) apply knowledge to health in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues



Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(F) apply knowledge and skills to health and safety in the workplace as specified by appropriate governmental regulations	(ii) apply knowledge to safety in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(F) apply knowledge and skills to health and safety in the workplace as specified by appropriate governmental regulations	(iii) apply skills to health in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues
(2) The student explores the characteristics of a successful worker in the global economy. The student is expected to:	(F) apply knowledge and skills to health and safety in the workplace as specified by appropriate governmental regulations	(iv) apply skills to safety in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(A) employ welding equipment according to safety standards	(i) employ welding equipment according to safety standards	Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Activity - Emergency Plans; Activity - Hazard Communications; Activity - Shop Layout; Project - Personal Protective Equipment; Project - Safety Colors; Project - Safety Rules	Welding Shop Safety
			Student/Teacher	Narrative	9781614592105	Welding Inspection & Testing	
			Student/Teacher	Activity	9781614592105	Activity - Visual Inspection; Activity - Visual Inspection Teacher Instruction Sheet	Welding Inspection & Testing Sheet
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(B) identify and properly dispose of environmentally hazardous materials used in welding	(i) identify environmentally hazardous materials used in welding	Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Activity - Hazard Communications	Welding Shop Safety
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(B) identify and properly dispose of environmentally hazardous materials used in welding	(ii) properly dispose of environmentally hazardous materials used in welding	Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Activity - Hazard Communications; Project - Safety Rules	Welding Shop Safety
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(C) explain the importance of recycling materials used in welding	(i) explain the importance of recycling materials used in welding	Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Activity - Hazard Communications	Welding Shop Safety
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(D) choose appropriate personal protective equipment	(i) choose appropriate personal protective equipment	Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Project - Personal Protective Equipment	Welding Shop Safety

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(E) evaluate skills related to health and safety in the workplace as specified by appropriate governmental regulations	(i) evaluate skills related to health in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues
(3) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	(E) evaluate skills related to health and safety in the workplace as specified by appropriate governmental regulations	(ii) evaluate skills related to safety in the workplace as specified by appropriate governmental regulations	Student/Teacher	Narrative	9781614592105	Safe Working Environment	
			Student/Teacher	Activity	9781614592105	Activity - OSHA Handbook	Safe Working Environment
			Student/Teacher	Narrative	9781614592105	Workplace Issues	
			Student/Teacher	Activity	9781614592105	Activity - Comparing Workplace Policies and Procedures Teacher Instruction Sheet; Activity - Federal Laws for Safety; Project - In Your Own Words OSHA in the Workplace; Student Handout - Employee Rights and Responsibilities in the Workplace	Workplace Issues
(4) The student compares and contrasts welding joint design, material symbols, and welds. The student is expected to:	(A) demonstrate knowledge of welding sketches	(i) demonstrate knowledge of welding sketches	Student/Teacher	Narrative	9781614592105	Welding Blueprints & Symbols	
			Student/Teacher	Activity	9781614592105	Activity - Blueprint Discovery; Activity - Blueprint Parts; Activity - Isometric Drawing; Activity - Isometric Drawing Answer Key; Activity - Scales & Measurements; Activity - Scales & Measurements Answer Key; Activity - Weld Joints; Activity - Weld Joints Answer Key; Project - Blueprint Creation	Welding Blueprints & Symbols
(4) The student compares and contrasts welding joint design, material symbols, and welds. The student is expected to:	(B) identify types of welds such as fillet, groove, spot, plug, and flanged	(i) identify types of welds	Student/Teacher	Narrative	9781614592105	Welding Blueprints & Symbols	
			Student/Teacher	Activity	9781614592105	Activity - Weld Joints; Activity - Weld Joints Answer Key	Welding Blueprints & Symbols

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(5) The student applies academic skills in relationship to welding. The student is expected to:	(A) demonstrate mathematical skills related to welding	(i) demonstrate mathematical skills related to welding	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Math Worksheet; Project - Math in Welding	Mathematics in Welding
(5) The student applies academic skills in relationship to welding. The student is expected to:	(B) demonstrate technical writing skills related to welding	(i) demonstrate technical writing skills related to welding	Student/Teacher	Narrative	9781614592105	Welding Blueprints & Symbols	
			Student/Teacher	Activity	9781614592105	Activity - Blueprint Discovery; Activity - Blueprint Parts; Activity - Isometric Drawing; Activity - Isometric Drawing Answer Key; Activity - Scales & Measurements; Activity - Scales & Measurements Answer Key; Activity - Weld Joints; Activity - Weld Joints Answer Key; Project - Around Campus; Project - Blueprint Creation; Student Handout - Welding Symbol	Welding Blueprints & Symbols
(5) The student applies academic skills in relationship to welding. The student is expected to:	(C) apply accurate readings of measuring devices	(i) apply accurate readings of measuring devices	Student/Teacher	Narrative	9781614592105	Measurement in Construction	
			Student/Teacher	Activity	9781614592105	Activity - Measuring; Activity - Measuring Teacher Instruction Sheet	Measurement in Construction
(5) The student applies academic skills in relationship to welding. The student is expected to:	(D) accurately use appropriate tools to make measurements	(i) accurately use appropriate tools to make measurements	Student/Teacher	Narrative	9781614592105	Measurement in Construction	
			Student/Teacher	Activity	9781614592105	Activity - Measuring; Activity - Measuring Teacher Instruction Sheet	Measurement in Construction
(5) The student applies academic skills in relationship to welding. The student is expected to:	(E) solve problems using whole numbers, fractions, mixed numbers, and decimals	(i) solve problems using whole numbers	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Basic Math; Activity - Basic Math Answer Key; Project - Math in Welding	Mathematics in Welding

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(5) The student applies academic skills in relationship to welding. The student is expected to:	(E) solve problems using whole numbers, fractions, mixed numbers, and decimals	(ii) solve problems using fractions	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Basic Math; Activity - Basic Math Answer Key; Project - Math in Welding	Mathematics in Welding
(5) The student applies academic skills in relationship to welding. The student is expected to:	(E) solve problems using whole numbers, fractions, mixed numbers, and decimals	(iii) solve problems using mixed numbers	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Basic Math; Activity - Basic Math Answer Key; Project - Math in Welding	Mathematics in Welding
(5) The student applies academic skills in relationship to welding. The student is expected to:	(E) solve problems using whole numbers, fractions, mixed numbers, and decimals	(iv) solve problems using decimals	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Basic Math; Activity - Basic Math Answer Key; Project - Math in Welding	Mathematics in Welding
(5) The student applies academic skills in relationship to welding. The student is expected to:	(F) perform conversions between fractions and decimals	(i) perform conversions between fractions and decimals	Student/Teacher	Narrative	9781614592105	Mathematics in Welding	
			Student/Teacher	Activity	9781614592105	Activity - Basic Math; Activity - Basic Math Answer Key; Project - Math in Welding	Mathematics in Welding
(5) The student applies academic skills in relationship to welding. The student is expected to:	(G) perform conversions between standard units and metric units	(i) perform conversions between standard units and metric units	Student/Teacher	Narrative	9781614592105	Measurement in Construction	
			Student/Teacher	Activity	9781614592105	Assessment II - Units & Conversion; Assessment II - Units & Conversion Answer Key; Activity - Conversion; Activity - Conversion Answer Key	Measurement in Construction
(6) The student applies the concepts and skills of welding projects. The student is expected to:	(A) explore careers in welding	(i) explore careers in welding	Student/Teacher	Narrative	9781614592105	Virtual Job Descriptions for Welding	
			Student/Teacher	Activity	9781614592105	Activity - Career Connections	Virtual Job Descriptions for Welding

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(6) The student applies the concepts and skills of welding projects. The student is expected to:	(B) understand welding codes such as American Petroleum Institute (API) 1104 and American Welding Society (AWS) D1.1	(i) understand welding codes	Student/Teacher	Narrative	9781614592105	Welding Inspection & Testing	
			Student/Teacher	Activity	9781614592105	Project - Code Requirements	Welding Inspection & Testing
			Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: AWS EDU-6 Entry Level Welder Qualification Test	
(6) The student applies the concepts and skills of welding projects. The student is expected to:	(C) work independently to fabricate a variety of welded projects with minimal assistance	(i) work independently to fabricate a variety of welded projects with minimal assistance	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Welding & Brazing	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Welding & Brazing
			Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Weld Joint; Project - Pad of Beads	Shielded Metal Arc Welding: Preparation & Safety
(6) The student applies the concepts and skills of welding projects. The student is expected to:	(D) work collaboratively with other students	(i) work collaboratively with other students	Student/Teacher	Narrative	9781614592105	Introduction to Metals	
			Student/Teacher	Activity	9781614592105	Activity - Structural Shapes	Introduction to Metals
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(A) use safe operating practices	(i) use safe operating practices	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Welding & Brazing	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Welding & Brazing
			Student/Teacher	Narrative	9781614592105	Oxy-Acetylene Welding: Safety & Introduction	
			Student/Teacher	Activity	9781614592105	Activity - Safety in the Shop	Oxy-Acetylene Welding: Safety & Introduction
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(B) perform safe handling of compressed gases	(i) perform safe handling of compressed gases	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Welding & Brazing	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Welding & Brazing
			Student/Teacher	Narrative	9781614592105	Welding Inspection & Testing	
			Student/Teacher	Narrative	9781614592105	Welding Shop Safety	
			Student/Teacher	Activity	9781614592105	Activity - Hazard Communications; Project - Safety Rules	Welding Shop Safety
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(C) identify components of oxy-fuel gas cutting	(i) identify components of oxy-fuel gas cutting	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Cutting	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Welding & Brazing

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(D) demonstrate proper set-up procedures for the oxy-fuel process	(i) demonstrate proper set-up procedures for the oxy-fuel process	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Welding & Brazing	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice; Project - Creative Design; Project - Weld Types	Oxy-Fuel Welding & Brazing
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(E) identify the factors affecting the oxy-fuel cutting of base metals	(i) identify the factors affecting the oxy-fuel cutting of base metals	Student/Teacher	Narrative	9781614592105	Introduction to Metals	
			Student/Teacher	Activity	9781614592105	Activity - Metal Comparison; Activity - Metal Comparison Teacher Instruction Sheet	Introduction to Metals
			Student/Teacher	Narrative	9781614592105	Oxy-Fuel Cutting	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Cutting
(7) The student performs oxy-fuel cutting processes on carbon steels. The student is expected to:	(F) demonstrate proper cutting techniques such as piercing, straight line, and bevel	(i) demonstrate proper cutting techniques	Student/Teacher	Narrative	9781614592105	Oxy-Fuel Welding & Brazing	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Welding & Brazing
			Student/Teacher	Narrative	9781614592105	Oxy-Fuel Cutting	
			Student/Teacher	Activity	9781614592105	Activity - Welding Practice	Oxy-Fuel Cutting
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(A) use safe operating practices	(i) use safe operating practices	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding; Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Dry Run; Project - Inspection & Set-Up	Shielded Metal Arc Welding; Preparation & Safety
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(B) demonstrate knowledge of welding currents	(i) demonstrate knowledge of welding currents	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding; Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - AC/DC Venn Diagram; Activity - Currents; Activity - Currents Answer Key	Shielded Metal Arc Welding; Preparation & Safety
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(C) apply shielded metal arc welding principles	(i) apply shielded metal arc welding principles	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding; Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Dry Run; Activity - Weld Joint; Project - Filler Metal Classification System; Project - Pad of Beads; Project - Welding & Cutting Processes Comparison	Shielded Metal Arc Welding; Preparation & Safety

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(D) demonstrate proper set-up procedure for shielded metal arc welding	(i) demonstrate proper set-up procedure for shielded metal arc welding	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Project - Inspection & Set-Up	Shielded Metal Arc Welding: Preparation & Safety
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(E) determine appropriate electrodes for base metal in shielded metal arc welding	(i) determine appropriate electrodes for base metal in shielded metal arc welding	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Dry Run; Activity - Weld Joint; Project - Filler Metal Classification System; Project - Inspection & Set-Up; Project - Pad of Beads	Shielded Metal Arc Welding: Preparation & Safety
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(F) perform fillet and groove welds in all positions	(i) perform fillet and groove welds in all positions	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Dry Run; Activity - Weld Joint; Project - Pad of Beads	Shielded Metal Arc Welding: Preparation & Safety
			Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: 6010 Electrodes	
			Student/Teacher	Activity	9781614592105	Activity - 6010 Welding Practice	Shielded Metal Arc Welding: 6010 Electrodes
			Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: 7018 Electrodes; Activity - 7018 Welding Practice	Shielded Metal Arc Welding: 7018 Electrodes; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
(8) The student performs shielded metal arc welding principles and practices on metals. The student is expected to:	(G) prepare joints for welding	(i) prepare joints for welding	Student/Teacher	Narrative	9781614592105	Shielded Metal Arc Welding: Preparation & Safety	
			Student/Teacher	Activity	9781614592105	Activity - Weld Joint	Shielded Metal Arc Welding: Preparation & Safety
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(A) use safe operating practices	(i) use safe operating practices	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance	
			Student/Teacher	Activity	9781614592105	Activity - Gas Metal Arc Welding Set-Up	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance



Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(B) apply gas metal arc welding principles	(i) apply gas metal arc welding principles	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Aluminum	
			Student/Teacher	Activity	9781614592105	Activity - Aluminum Welding	Gas Metal Arc Welding: Aluminum
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Carbon Steel; Activity - Carbon Steel Welding	Gas Metal Arc Welding: Carbon Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Sheet Metal; Activity - Sheet Metal Welding	Gas Metal Arc Welding: Sheet Metal; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Stainless Steel; Activity - Stainless Steel Welding	Gas Metal Arc Welding: Stainless Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(C) demonstrate proper set-up procedure for gas metal arc welding	(i) demonstrate proper set-up procedure for gas metal arc welding	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance	
			Student/Teacher	Activity	9781614592105	Activity - Gas Metal Arc Welding Set-Up	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(D) use appropriate equipment setup for base metal in gas metal arc welding	(i) use appropriate equipment setup for base metal in gas metal arc welding	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance	
			Student/Teacher	Activity	9781614592105	Activity - Gas Metal Arc Welding Set-Up	Gas Metal Arc Welding: Equipment, Set-Up & Maintenance

Knowledge and Skills Statement	Student Expectation	Breakout	Item Type	Citation Type		Page (s)	Specific Location
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(E) perform fillet and groove welds using gas metal arc welding with various metal transfer processes	(i) perform fillet welds using gas metal arc welding with various metal transfer processes	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Aluminum	
			Student/Teacher	Activity	9781614592105	Activity - Aluminum Welding	Gas Metal Arc Welding: Aluminum
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Carbon Steel; Activity - Carbon Steel Welding	Gas Metal Arc Welding: Carbon Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Sheet Metal; Activity - Sheet Metal Welding	Gas Metal Arc Welding: Sheet Metal; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Stainless Steel; Activity - Stainless Steel Welding	Gas Metal Arc Welding: Stainless Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
(9) The student performs gas metal arc welding principles and practices. The student is expected to:	(E) perform fillet and groove welds using gas metal arc welding with various metal transfer processes	(ii) perform groove welds using gas metal arc welding with various metal transfer processes	Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Aluminum	
			Student/Teacher	Activity	9781614592105	Activity - Aluminum Welding	Gas Metal Arc Welding: Aluminum
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Carbon Steel; Activity - Carbon Steel Welding	Gas Metal Arc Welding: Carbon Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Sheet Metal; Activity - Sheet Metal Welding	Gas Metal Arc Welding: Sheet Metal; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.
			Student/Teacher	Narrative	9781614592105	Gas Metal Arc Welding: Stainless Steel; Activity - Stainless Steel Welding	Gas Metal Arc Welding: Stainless Steel; PLEASE NOTE: Due to space limitations, the narrative and associated activity are listed on one line. Several lessons and corresponding activities satisfy this standard.