Goodheart-Willcox Publisher
18604 West Creek Drive • Tinley Park, IL 60477 • 800.323.0440 • www.g-w.com

Correlation of

Welding Fundamentals, 5e, ©2017

to the

Texas Essential Knowledge and Skills (TEKS)
Course: §130.363 Welding I (MLC 9561)

The following chart lists the Knowledge and Skills Statements and Student Expectations for the Texas Essential Knowledge and Skills (TEKS) for Welding I. For each Student Expectation, the corresponding pages in ***Welding Fundamentals*** are listed.

Student Expectations	Textbook Page(s)
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	
(1) (A) express ideas to others in a clear, concise, and effective manner through written and verbal communication	7
(1) (B) convey written information that is easily understandable to others	7
(1) (C) demonstrate acceptable work ethics in reporting for duty and performing assigned tasks as directed	7
(1) (D) conduct oneself in a manner acceptable for the profession and work site such as suitable dress and polite speech	7
(1) (E) choose the ethical course of action and comply with all applicable rules, laws, and regulations	7
(1) (F) review the fine, detailed aspects of both quantitative and qualitative work process and end products	171–172, 176
(1) (G) evaluate systems and operations; identify causes, problems, patterns, or issues; and explore workable solutions or remedies to improve situations	176
(1) (H) follow written and oral instructions and adhere to established business practices, policies, and procedures, including health and safety rules	7, 20–22
(1) (I) prioritize tasks, follow schedules, and work on goal-relevant activities in a way that uses time wisely in an effective, efficient manner	7

Student Expectations	Textbook Page(s)
(2) The student explores the employability characteristics of a successful worker in the global economy. The student is expected to:	
(2) (A) explore academic knowledge and skills required for postsecondary education	6, 9–10
(2) (B) identify employers' expectations to foster positive customer satisfaction	13
(2) (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	12–13
(2) (D) evaluate personal career goals	4
(2) (E) communicate effectively with others in the workplace to clarify objectives	6–7
(2) (F) demonstrate skills related to health and safety in the workplace as specified by appropriate governmental regulations	22, 27
(3) The student applies academic skills to the requirements of welding. The student is expected to:	
(3) (A) demonstrate effective communication skills with individuals from varied cultures such as fellow workers, management, and customers	6
(3) (B) demonstrate mathematical skills to estimate costs	82–86
(3) (C) demonstrate technical writing skills related to work orders	580
(3) (D) apply accurate readings of measuring devices	78–82
(3) (E) use appropriate tools to make accurate measurements	76–77
(3) (F) compute measurements such as area, surface area, volume, and perimeter	78–82
(3) (G) solve problems using whole numbers, fractions, mixed numbers, and decimals	60–69
(3) (H) use various methods, including a calculator, to perform computations	70
(3) (I) perform conversions between fractions and decimals	69–70
(3) (J) perform conversions between standard units and metric units	77

Student Expectations	Textbook Page(s)
(3) (K) calculate and apply the functions of angles such as using the Pythagorean Theorem	79–80
(3) (L) diagram the parts of a circle	78
(4) The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:	
(4) (A) operate welding equipment according to safety standards	242
(4) (B) identify and properly dispose of environmentally hazardous materials used in welding	27, 29–30
(4) (C) explain the importance of recycling materials used in welding	29
(4) (D) choose appropriate personal protective equipment	20–22, 137–138
(4) (E) evaluate skills related to health and safety in the workplace as specified by appropriate governmental regulation	20, 27
(5) The student understands welding joint design, symbols, and welds. The student is expected to:	
(5) (A) demonstrate knowledge of engineering drawings, charts, and diagrams	108–110, 492
(5) (B) interpret orthographic and isometric views of three-dimensional figures	108–109
(5) (C) interpret engineering drawings, charts, and diagrams	108–110, 492–496
(5) (D) analyze components of the welding symbol	110–118
(5) (E) identify types of welding joints	92–95, 508
(5) (F) identify positions of welding	99–103, 508–509
(5) (G) identify types of welds such as fillet, groove, spot, plug, and flanged	95–96, 118–123
(6) The student analyzes the concepts and intricacies of inspections and related codes. The student is expected to:	
(6) (A) explain weld inspection processes	554–568
(6) (B) interpret welding codes	574–575
(7) The student analyzes oxy-fuel cutting processes on carbon steels. The student is expected to:	
(7) (A) practice safe operating practices	355–356, 380, 395
(7) (B) perform safe handling of compressed gases	28, 353–361

Student Expectations	Textbook Page(s)
(7) (C) identify components of oxy-fuel gas cutting systems	361–366
(7) (D) demonstrate proper set-up procedures for oxy-fuel cutting process	378–389, 394–395
(7) (E) identify factors affecting oxy-fuel cutting of base metals	395–397
(7) (F) demonstrate proper cutting techniques such as piercing, straight line, and bevel	395–401
(7) (G) identify acceptable cuts	397
(7) (H) evaluate alternative fuel gases such as propane, propylene, and Chemtane 2®	352
(8) The student analyzes plasma arc cutting on metals. The student is expected to:	
(8) (A) use safe operating practices	341
(8) (B) demonstrate knowledge of the theories of plasma arc cutting	336–337
(8) (C) apply safe handling of compressed air supply	28, 341
(8) (D) identify components of plasma arc cutting	337–342
(8) (E) demonstrate correct set-up procedure for plasma arc cutting	341–342
(8) (F) define cutting terms	344
(8) (G) perform straight line, piercing, bevel, and shape cuts	342–346
(9) The student analyzes shielded metal arc welding principles and practices on metals. The student is expected to:	
(9) (A) use safe operating practices	137–138, 168–169
(9) (B) analyze welding current relationships such as alternating current and direct current, heat transfer, and polarity	128–130
(9) (C) apply shielded metal arc welding principles	128
(9) (D) demonstrate proper set-up procedure for shielded metal arc welding	145–148
(9) (E) explain the American Welding Society (AWS) identification system for shielded metal arc welding electrodes	155–159
(9) (F) determine appropriate electrodes for base metal in shielded metal arc welding	159–161

Student Expectations	Textbook Page(s)
(9) (G) perform multi-pass groove welds in all positions to the AWS Schools Excelling through National Skills Education standards	96, 179–180, 189–193
(10) The student analyzes gas metal arc welding principles and practices. The student is expected to:	
(10) (A) use safe operating practices	222–223, 242
(10) (B) explain the effects that weld angle, work angle, and electrode extension have on welds	248–250, 265–266, 268
(10) (C) apply gas metal arc welding principles	210–211
(10) (D) demonstrate proper set-up procedure for gas metal arc welding	230–233
(10) (E) explain the AWS identification system for gas metal arc welding filler metal	236–239
(10) (F) determine appropriate filler metal for base metal in gas metal arc welding	239
(10) (G) perform fillet and groove welds in all positions	253–257, 264–272
(11) The student analyzes flux cored arc welding principles and practices on metals. The student is expected to:	
(11) (A) use safe operating practices	222–223, 242
(11) (B) explain the effects that weld angle, work angle, and electrode extension have on welds	248–250, 265–266, 268
(11) (C) apply flux cored arc welding principles	211–212
(11) (D) demonstrate proper set-up procedure for flux cored arc welding	230–233
(11) (E) explain the AWS identification system for flux cored arc welding electrodes	236–239
(11) (F) determine appropriate filler metal for base metal in flux cored arc welding	239
(11) (G) perform fillet and groove welds in all positions	253–257, 264–272
(12) The student analyzes gas tungsten arc welding on metals. The student is expected to:	
(12) (A) use safe operating practices	287, 324
(12) (B) analyze electrical welding current relationships such as alternating current and direct current, heat transfer, and polarity	278–282

Student Expectations	Textbook Page(s)
(12) (C) identify the common types of tungsten and filler metals according to the AWS identification system	298–299, 301
(12) (D) demonstrate proper set-up procedure for gas tungsten arc welding	292–301
(12) (E) perform fillet and groove welds in all positions	315–317, 324–327, 328–330
(12) (F) perform welds on metals such as carbon steel, stainless steel, and aluminum	317–318, 331