

23.24 Welding Technology: Scope & Sequence

SEMESTER 1, YEAR 1

WLD101 Welding Technologies: NC3 L.E.E.P.S
(90 days)

District Pre-Assessment

**Unit Name: (1) Welding Safety (Week 1: 4 days
classroom/1 day lab)**

2.5 class hours, 10 lab hours

- Shop safety procedures
- CTSO Integration (Leadership Skills): Officer Elections, CTSO Meetings
- Professional Skills: 3A-E
- Academic Standards: ELA.11-12.RI.10, RL.4
- Technical Standard: 1.0

**Unit Name: (2) Principles of Welding (Week 2: 4 days
classroom/1 lab day)**

2.5 class hours, 10 lab hours

- Identify other variables in welding: foundation, technology, science, inspection & testing, discontinuities
- CTSO Integration (Leadership Skills): Officer Elections, CTSO Meetings
- Professional Skills: 1.A- E, 9A-C
- Academic Standards: ELA.11-12.RI.10; 7.EE.B.3
- Technical Standard: 1.0, 7.0

**Unit Name: (3) Thermal Cutting (Weeks 3-10: 5 classroom
days/28 lab days)**

17.5 class hours, 70 lab hours

- OFC equipment & projects
- PAC equipment & projects
 - CAC equipment & projects
- CTSO Integration (Leadership Skills): CTSO Officer Training, CTSO Meeting
- Professional Skills: 8A-E
- Academic Standards: ELA.11-12.RI.10; A-CED.A.1
- Work-based Learning: OSHA 10
- Technical Standard: 1.0, 2.0, 7.1, 7.2, 7.3

9-Week Assessment

**Unit Name: (4) Introduction to Shielded Metal Arc Welding
(Week 11-20: 4 classroom days/43 lab days)**

65 class hours, 60 lab hours

- Identify & setup SMAW equipment
- Identify AWS electrode classification & storage
 - 1F Pad welds using 6013, 6010, & 7018
 - 2F, 3F, & 4F Tee-joints using 6010 & 7018
- CTSO Integration (Leadership Skills): Program of Work, SkillsUSA Fall Leadership Conference, CTSO Meetings, Welding Thunder
- Professional Skills: 2A-E
- Academic Standards: ELA.11-12.RL.4, 5.NF.B.7
- Work-based Learning: Welding Thunder, AZ Construction Days
- Technical Standard: 1.0, 3.1, 3.2, 3.3

Semester Exam

Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)

SEMESTER 2, YEAR 1

WLD102 Welding Technologies: NC3 L.E.E.P.S
(90 days)

**Unit Name: (4) Advanced Shielded Metal Arc Welding
(Weeks 21-39: 10 classroom days/80 lab days)**

50 class hours, 180 lab hours

- 2G, 3G, & 4G groove weld with backing
 - 2G, 3G, & 4G open groove welds
- Certification: AWS Certification & PMI
- CTSO Integration (Leadership Skills): SkillsUSA Regional & State Conferences, Guest Speakers, Industry Tours, CTSO Meetings
- Professional Skills: 1.A, 8.A-E
- Academic Standards: ELA.11-12.RI.10; 5.NF.B.7
- Work-based Learning: Guest Speakers, Industry Tours, Resume, Mock Interviews
- Technical Standard: 1.0, 2.2, 2.4, 3.5, 7.5, 8.2, 8.3, 9.

District Post-Assessment

American Welding Society (AWS)
Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)
Occupational Safety and Health Administration (OSHA)
NC3 L.E.E.P.S

SEMESTER 1, YEAR 2

WLD201 Welding Technologies: NC3 L.E.E.P.S

Unit Name: (1) Basic Weld Print Reading (Week 1: 5 classroom days)

12.5 class hours

- Identify weld symbols
 - CTSO Integration (Leadership Skills): CTSO Meeting
- Professional Skills: 1.A, 8.A-E
Academic Standards: ELA.11-12.W.1,4,5 &6
Technical Standard: 2.1, 2.2, 2.3, 2.4

Unit Name: (2) Advanced Gas Metal Arc Welding (Week 2-10: 4 classroom days/36 lab days)

10 class hours, 90 lab hours

- Identify GMAW equipment
 - Identify gases & filler metals
 - Identify metal transfers
 - 2F, 3F, & 4F tee-joint using short-circuit
 - 2F t-joint using spray transfer
 - 1G with backing using spray transfer
 - 2G, 3G, & 4G open groove welds
- CTSO Integration - SkillsUSA Fall Conference, Program of Work, CTSO meetings
Professional Skills: 2A-C, 3A-E, 9A-C
Academic Standards: ELA.11-12.RI.10; 7.G.B.4
Technical Standard: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7

Unit Name: (3) Advanced Flux-core Arc Welding (Week 11-20: 5 classroom days/40 lab days)

35 class hours, 90 lab hours

- Identify FCAW equipment
 - Identify gases & filler metals
 - 2F, 3F, & 4F tee-joints
 - 2G, 3G, & 4G groove with backing welds
- CTSO Integration: CTSO meetings
Professional Skills: 1.A, 8.A-E
Academic Standards: ELA.11-12.RI.10; 5.NF.B.7
Work-based Learning: AWS Certifications, Welding Thunder, AZ Construction Days
Technical Standard: 5.1, 5.2, 5.3, 5.4, 5.5

Semester Exam

Arizona Department of Education (ADE)
Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)
American Welding Society (AWS)

SEMESTER 2, YEAR 2

WLD201 Welding Technologies: NC3 L.E.E.P.S

Unit Name: (4) Welding Math and Measurement (Week 21: 4 classroom days/1 lab day)

10 class hours, 2.5 lab hours

- Solve word problems using basic math
 - Use measuring tools that measure welds and materials
 - Lab Activity Lesson

Professional Skills: 1.A, 8.A-E
Academic Standards: ELA.11-12.RI.10; 5.NF.B.7
Technical Standard: 2.3

Unit Name: (5) Introduction/Advanced Gas Tungsten Arc Welding (Week 22-39: 5 classroom days/85 lab days)

57.5 class hours, 180 lab hours

- Identify GTAW equipment
 - Identify gases & filler metal
 - 1F, 2F, 3F, & 4F t-joints on carbon steel
 - 1F, 2F, 3F, & 4F lap joints & tee-joints on aluminum
 - 2F, 3F, & 4F lap joints, & tee-joints on stainless steel
 - 2G, 3G, & 4G open groove welds on carbon steel (tig out & combo welds)
- CTSO Integration (Leadership Skills): SkillsUSA Regional & State Conferences, Cochise College Welding Competition, Guest Speakers, Industry Tours, CTSO meetings
Work-Based Learning: Guest Speakers, Industry Tours, Resume, Mock Interviews
Professional Skills: 1.A, 8.A-E
Academic Standards: ELA.11-12.RI.10; 5.NF.B.7
Technical Standard: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7

ADE Technical Skills Assessment

Arizona Department of Education (ADE)
Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)
American Welding Society (AWS)