

Practicum in Welding YAG

Practicum in Manufacturing - Welding Emphasis | \$127.865 | Two Credits | Full Year | 36 Weeks | Grade 12

Course Information: Practicum in Manufacturing is a paid or unpaid capstone experience that provides supervised practical application of previously studied manufacturing knowledge and skills. This welding-focused sequence is intentionally centered on layout and fabrication during Semester 1 and pipe welding during Semester 2. Local dual-credit alignment includes WLDG 1417 Introduction to Layout & Fabrication in the fall and WLDG 1435 Introduction to Pipe Welding in the spring. Students apply critical thinking, leadership, teamwork, communication, project management, technical skill evaluation, workplace feedback, and professional portfolio development throughout authentic welding work. §127.15(d)(2) CTE Employability Skills are integrated throughout.

GP	Wks	Unit & Focus	Major Learning Tasks & Assessments	Integrated TEKS	Extension Activities
1	1-2	Unit 1 - Practicum Launch, Safety, Leadership & Project Workflow	- Establish advanced shop/worksite safety, PPE and professional expectations - Analyze problems and technical information before beginning fabrication work - Assign/rotate team roles and demonstrate responsibility for individual/shared tasks - Develop semester goals, task priorities and project timelines - Launch professional welding practicum portfolio and skills baseline	- PWM1(A-C) - PWM2(A-E) - PWM4(D-I) - PWM5(A) §127.15(d)(2)	- ACCESS: welding career/credential planning - Skills baseline - Project-management setup
1	3-5	Unit 2 - Layout Tools, Blueprint Reading & Material Planning	- Identify/select layout and measuring tools for fabrication - Interpret blueprints, welding symbols, dimensions and written specifications - Apply technical math/measurement to plate and structural-shape layout - Create material/cut lists and maintain project records - Research technical information and evaluate source reliability	- PWM1(A-C) - PWM3(A-G) - PWM4(A-G)	- Blueprint challenge - Material/cut-list development - Technical resource analysis
1	6-8	Unit 3 - Plate Layout, Cutting & Part Preparation	- Perform accurate part layout from blueprints/specifications - Apply cutting and material-preparation processes appropriate to project needs - Check dimensions, squareness and fit-up before assembly - Troubleshoot layout/cutting errors using critical-thinking processes - Document work samples, measurements and corrective actions	- PWM1(A-C) - PWM2(B-E) - PWM3(A-G) - PWM4(C,F-I) - PWM5(A,E)	- Layout practical - Cut-quality/accuracy inspection - Portfolio work sample
1	9	Unit 4 - Fabrication Fit-Up, Tack Welding & Quality Control	- Fit and align fabricated components according to drawings - Apply tack-welding sequence and distortion-control planning - Use teamwork and active listening during assembly - Inspect fit-up and identify problems before final welding - Accept and apply instructor/supervisor feedback	- PWM1(A-C) - PWM2(B-E) - PWM3(B,E-G) - PWM4(G-I)	- Fit-up practical - Peer QC - Supervisor feedback reflection
2	10-12	Unit 5 - Structural Fabrication I: Assemblies from Blueprints	- Plan and execute a structural fabrication assignment - Use drawings, specifications, layout, cutting, fit-up and welding processes - Maintain project records and monitor timeline/workflow - Evaluate technical proficiency and finished-product quality - Resolve production problems collaboratively	- PWM1(A-C) - PWM2(A-E) - PWM3(A-G) - PWM4(A-I) - PWM5(A,E)	- Structural assembly - Production log - Quality review
2	13-15	Unit 6 - Structural Fabrication II: Advanced Layout & Production	- Complete increasingly complex layout/fabrication work with greater independence - Apply efficient material use, sequencing and production planning - Demonstrate leadership/teamwork during multi-step fabrication - Monitor/control project progress and revise plans as needed - Collect representative work samples and document technical growth	- PWM1(A-C) - PWM2(A-E) - PWM3(A-G) - PWM4(C-I) - PWM5(A,E)	- Advanced fabrication project - Team leadership rotation - Portfolio evidence
2	16-17	Unit 7 - Semester Fabrication Capstone & Industry Documentation	- Complete a layout/fabrication capstone from blueprint to finished assembly - Use project-management stages to initiate, plan, execute, monitor/control and close work - Present technical decisions, challenges and solutions - Complete self/peer/supervisor evaluation of technical skills - Develop Semester 1 practicum abstract and portfolio evidence	- PWM1(A-C) - PWM2(A-E) - PWM3(A-G) - PWM4(A-I) - PWM5(A,C,E-F)	- Fabrication capstone - Technical presentation - Semester portfolio review
2	18	Semester 1 Exam - Layout & Fabrication	- Cumulative written/performance assessment covering layout tools, blueprints, material planning, cutting, fit-up, fabrication, quality and project management - Semester fabrication performance/product evaluation - Portfolio and supervisor-feedback review	- Cumulative PWM1-5 §127.15(d)(2)	Targeted review/remediation
3	19-20	Unit 8 - Pipe Welding Foundations: Safety, Pipe Identification & Preparation	- Apply pipe-welding safety and safe shop practices - Identify pipe, fittings, joint configurations and pipe-welding terminology - Interpret pipe drawings/symbols and specifications - Prepare pipe through measurement, cutting, beveling, cleaning and fit-up - Develop spring goals/timelines and document technical baseline	- PWM1(A-C) - PWM2(B-E) - PWM3(A-G) - PWM4(A-I) - PWM5(A)	- Pipe component identification - Preparation/fit-up practical - Spring skills baseline
3	21-23	Unit 9 - Pipe Layout, Fit-Up & 1G/2G Welding	- Perform pipe/fitting layout according to drawings - Select electrodes/process settings and prepare joints - Develop pipe welding technique in 1G and 2G positions - Use teamwork and communication during fit-up and inspection - Evaluate weld quality and respond to supervisor feedback	- PWM1(A-C) - PWM2(A-E) - PWM3(A-G) - PWM4(C-I) - PWM5(A,E-F)	- Pipe layout practical 1G/2G weld progression - Inspection/reflection

GP	Wks	Unit & Focus	Major Learning Tasks & Assessments	Integrated TEKS	Extension Activities
3	24–27	Unit 10 - Pipe Welding Skill Development: Fixed Positions	• Progress from rotated positions toward fixed-position pipe welding as appropriate • Refine root, fill and cap techniques and interpass preparation • Analyze discontinuities and troubleshoot causes • Use technical references/specifications to guide decisions • Track technical growth through work samples and performance records	• PWM1(A–C) • PWM2(B–E) • PWM3(A–G) • PWM4(A–I) • PWM5(A,E–F)	• Fixed-position skill progression • Troubleshooting log • Portfolio weld samples
4	28–30	Unit 11 - Advanced Pipe Welding & Qualification Preparation	• Apply increasingly independent pipe preparation, fit-up and welding procedures • Practice qualification-style work under defined acceptance criteria • Plan time/materials and maintain accurate work records • Evaluate strengths/weaknesses and use critical feedback for improvement • Research industry credentials, employers and apprenticeship expectations	• PWM1(A–C) • PWM2(A–E) • PWM3(A–G) • PWM4(A–I) • PWM5(A–B,E–F)	• Qualification-style practice • ACCESS: credentials/apprenticeships • Supervisor evaluation
4	31–33	Unit 12 - Pipe Fabrication Project & Field Application	• Plan and complete an applied pipe layout/fabrication assignment • Integrate drawing interpretation, pipe layout, preparation, fit-up and welding • Use project-management processes to control workflow and quality • Demonstrate leadership, teamwork and effective technical communication • Close the project with inspection, documentation and lessons learned	• PWM1(A–C) • PWM2(A–E) • PWM3(A–G) • PWM4(A–I) • PWM5(A,E–F)	• Pipe fabrication project • Project closeout report • Team quality review
4	34–35	Unit 13 - Practicum Portfolio, Career Transition & Welding Showcase	• Finalize résumé, practicum abstract and representative work samples • Document technical growth, credentials/certification activities and supervisor evaluations • Evaluate career goals and next steps for college, apprenticeship or employment • Practice interview and stakeholder presentation skills • Present professional portfolio and selected layout/fabrication and pipe-welding evidence	• PWM1(A–C) • PWM2(A–E) • PWM3(A–G) • PWM4(D–I) • PWM5(A–G) • §127.15(d)(2)	• ACCESS: résumé/job/apprenticeship planning • Mock interview • Portfolio presentation
4	36	Semester 2 Exam & Practicum Welding Showcase	• Cumulative assessment across all Practicum in Manufacturing TEKS • Pipe-welding/application and project-management evaluation • Final professional portfolio and stakeholder showcase	• Cumulative PWM1–5 • §127.15(d)(2)	• Targeted remediation • Welding showcase

Practicum in Manufacturing TEKS Coverage Checklist - Welding Emphasis

Coverage verification: All five current Practicum in Manufacturing knowledge and skills strands and all 31 student expectations in §127.865(d), plus §127.15(d)(2) CTE Employability Skills, are intentionally addressed through welding-focused practicum experiences.

Strand	SEs	Knowledge & Skills Focus	YAG Placement	Coverage
PWM1	A-C	Critical thinking/problem solving: analyze problems, critically analyze information, conduct technical research	All units, especially 1-3, 7, 10-12	100%
PWM2	A-E	Leadership/teamwork: leadership characteristics, cooperative work, team processes, responsibility, effective working relationships	All fabrication/pipe project units	100%
PWM3	A-G	Technical communication: vocabulary, verbal information, technical texts, source reliability, cues, active listening, written/oral communication	All units; presentations in 7 & 13	100%
PWM4	A-I	Manufacturing technical/career skills: information literacy/management, records, goals, priorities, timelines, project management, skill evaluation, feedback	All units; project management emphasized 1, 5-7, 12	100%
PWM5	A-G	Professional portfolio: technical growth, licensure/certification activity, practicum abstract, résumé, work samples, evaluations, stakeholder presentation	Units 1, 3, 5-7, 8-13	100%
§127.15(d)(2)	Integrated	Required Level 3/4 CTE employability skills	All units	100%

Implementation Notes

- Semester 1 is intentionally centered on layout and fabrication, including layout tools, blueprint interpretation, structural shapes, material planning, part layout, cutting, fit-up, assembly, fabrication workflow and quality control.
- Semester 2 is intentionally centered on pipe welding, including pipe identification, pipe/fitting layout, preparation, fit-up, electrode/process decisions, 1G/2G progression, fixed-position practice as appropriate, inspection and applied pipe fabrication.
- ECISD's Welding program of study identifies WLDG 1417 Introduction to Layout & Fabrication and WLDG 1435 Introduction to Pipe Welding as the college courses aligned to Practicum in Welding. Instruction should preserve college/dual-credit expectations when applicable.
- Practicum TEKS emphasize transferable capstone competencies rather than prescribing individual welding processes. Welding technical content therefore serves as the authentic context for critical thinking, leadership/teamwork, communication, project management, skill evaluation, feedback and portfolio development.
- ACCESS should support advanced welding careers, Odessa College/other postsecondary pathways, apprenticeship, industry credentials, résumé/interview development and employment transition.
- Weeks 18 and 36 are reserved for cumulative semester exams. No instructional unit crosses the semester boundary.