Course Prefix and Number: WLD-I

Instructor: Lisa Moran, Guadalupe Ruiz

Contact information: lmoran@wilcoacc.org, gruiz@wilcoacc.org

Course Title: Welding Technology & Careers 1

Curriculum: Welding & Manufacturing Technology

Dual Credit: WLDG 101, MFG 115

Course Description:

WLD-I is an introductory Industry Orientation course which emphasizes safety, workplace-skills ("soft-skills") development, job readiness indicators, ongoing education and career planning. Topics covered include: Safety, Industry Orientation, Welding Terms & Symbols, Blueprint Reading, Welding Procedures & Codes, as well as the technology and processes used in the Welding Industry. As an American Welding Society (AWS) Educational Institution, this program is intended to prepare students for the expectations & demands of becoming an AWS Entry Level Welder. Students will explore a variety of career pathways, industry organizations and related fields that can be accessed by a qualified individual.

Students will also receive hands-on training in the basic fundamentals of Arc Welding Technology. This includes exposure to: Shielded Metal Arc Welding (SMAW) & Gas Metal Arc Welding (GMAW). Additional training will cover Plasma Arc & Oxy-Fuel Cutting processes (PAC & OFC), as well as the use of shop equipment, tools and techniques involved with welding mild steel.

Classwork will be split between classroom lecture, direct instruction and lab/shop exercises involving individual and group tasks.

As a Dual Credit program, coursework is aligned to the JJC Welding Program standard, making this class college level coursework. Students will be expected to maintain the level of study skills and participation expected of a JJC student.

Course Objectives:

A student completing this course will be capable of identifying and pursuing different positions & career pathways in the Welding, Manufacturing and Skilled Trade sectors. Students will be familiar with options for continuing education, internships, apprenticeships and essential job requirements. In addition, students will develop the Workplace Skills & Technical Skills needed to pursue entry-level welding positions or apprenticeships or identify the ongoing education option best suited to their career goals. Graduates will be aware of various Skilled Trade positions in the Union, Private Industrial/Commercial

and Military pathways available to them after in-class visits by representatives from these industry sectors.

Students will be prepared to safely operate tools and equipment in a commercial/industrial environment under OSHA guidelines. A student completing this course will be capable of welding to specifications, as defined by AWS D1.1 Code for Structural Welding of Carbon Steel. Throughout the course the student will be working on individual lab welding projects, or in group/team settings as dictated by instructors.

Hands-on training will cover the use of equipment needed to weld a basic surfacing bead as well as Groove & Fillet joint configurations in the flat & horizontal positions, using mild steel, as well as being able to cut mild steel using manual & automatic cutting methods.

Student materials:

A. **Textbook** (*provided*): G&W, Modern Welding-12th Edition: *Bowditch, Turnquist & Althouse*

B. Notebook: note taking is a compulsory portion of classroom education. Students are required to take notes during lecture and presentations.

C. Computers: Students will be issued a laptop for classroom use by Wilco, however, students are allowed to use laptops or Chromebooks provided by their home school. No personal computers are allowed on school networks.

Student Evaluation & Testing Policy

Students will be assessed through a combination of academic Testing, practical (hands-on) Skills Assessment and Participation in organized learning activities. Criteria for Skills Assessment are aligned to the American Welding Society guidance for Entry-Level Welders & AWS B1.11. Assignments are graded on a point value system aligned to the Wilco standard for grading.

Participation & Job Readiness evaluations are daily and ongoing assessments of student performance as it pertains to the Non-Technical skills & overall preparedness for job performance. Each student will be given a 400-point total each week (aligning with the standard “1-4” skills assessment model used in industry). Points will be reduced based on failure to participate, unsatisfactory performance or violations of policy & procedure (simulating pay reduction practices in work contexts). Removal by an instructor from class activity or unwillingness to participate will result in zero points earned for the day’s activity.

The Semester Exams & Finals will contain a written Exam as well as a Practical Test, making up 20% of the overall grade.

The remaining 80% of the Progress Scores are a combination of Hands-On/Technical Skill Development (30%), Participation/Preparedness/Job Readiness (40%), Practical: Quiz/Tests (10%)

Wilco Area Career Center Grading Scale:

100–90 = A

89 – 80 = B

79 – 70 = C

69 – 60 = D

below 59 = F

Dual Credit Evaluations:

Students will receive Dual Credit through Joliet Junior College if they have completed the minimum of required tasks by the end of their respective semester using the JJC grading standard (which may not directly correspond to the Wilco grading scale or timetable). If a student is not meeting the JJC requirement by the end of the respective Semester they may be removed from the JJC roster for Dual Credit.

JJC Grading Scale:

100-94 = A

88-93 = B

80-87 = C

79 & Below = DROP FROM DUAL CREDIT

Note: All in-class assignments must be actively worked on to their completion within the Welding Laboratory. For academic testing, re-tests are allowed based on student needs and instructor approval. Re-test dates shall be presented to students. Re-test on Practical/Lab based assessments may be subjected to reduced scores for late submission per instructor discretion.

Safety Policy & Procedure Overview:

Notice *Arc Welding processes possess inherent and unavoidable health risks. Proper use of equipment and workspaces can eliminate or greatly reduce most risks. Regardless of compliance with safety guidelines, students will be exposed to the following risks: high heat, sparks, fire, high voltage electricity, flying particles, moving or rotating powered equipment, sharp surfaces and falling objects. These risks can never be reduced to 0% and students must participate in shop activities for class credit.*

Safety Guidelines and Personal Protective Equipment requirements are based on OSHA: cfr1910 & AWS/ANSI: Z49.1 standards. All safety policies are compulsory and compliance is mandatory for class credit. Students are required to abide by all shop safety criteria established by the instructor or be withdrawn from class activity. A detailed explanation of Shop Safety Policies & Procedures will be delivered during orientation. It is expected that students consistently abide by all safety directives while involved in class activities. **Safety glasses will be worn at all times**, except during sit-down lectures in the classroom area or during select times when the lab has been designated as safe.

After completion of the Safety Orientation training it is expected that students follow the guidelines established during training.Students are responsible for their own safety as well as the safety of other

students, staff and visitors. Lab dress code requirements are a class safety policy and students improperly dressed for class will not be allowed access to lab areas.The unauthorized use of tools and equipment is strictly prohibited. Disruptive behavior, “Horseplay”, leaving work areas without authorization, or improper actions of any kind are considered a safety hazard and are grounds for disciplinary intervention.

Any injury or equipment damage shall be immediately reported to welding staff, regardless of severity. All safety violations are subject to review. Intentional or neglectful violations of safety procedures are subject to disciplinary intervention.

Heat Advisory* *Welding Shop temperatures can significantly exceed outdoor temps, which can lead to high temps in work areas. During hot days students are encouraged to bring a water bottle (or other form of hydration) to class. There are refill stations and water bottles are available for purchase at Wilco, but it is recommended that students are properly hydrated upon arrival. Any indications of heat related stress should be immediately reported to welding staff*

Dress Code:

Participation in Lab activities will require students to be properly dressed in clothing appropriate for an Industrial environment where exposure to heat, sparks, flames and falling objects are present. Students will be asked to wear clothing made from natural fibers such as cotton (or wool) and no synthetic materials such as polyester, spandex or vinyl. Recommendations are Cotton t-shirts, jeans and leather work-boots (steel or safety-composite toe boots are recommended) as daily wear items. Students will be expected to arrive “dressed for work” each day. Standards for professionalism apply to clothing as well, and students wearing items offensive or otherwise inappropriate for a work environment will be subject to disciplinary intervention and removal from class activity.

Personal Protective Equipment (PPE):

The use of Arc Welding equipment will require the student purchase of PPE. Students are required to provide a *Welding Helmet, Welding Jacket & Welding Gloves*. A basic pair of safety glasses will be issued, but students are required to replace missing or damaged safety glasses. Information about PPE specifications and requirements (as well as how & where to purchase) will be given during class orientation.

*Students on the Free/Reduced Lunch Programs will be issued a set of PPE by Wilco, to be returned upon course completion (*See home school for details on FRL program*)

Attendance:

Attendance and participation at Wilco is viewed as a Workplace Readiness Indicator and it is expected that students maintain a positive attendance standing. Students are evaluated on participation and attendance as part of their Performance Evaluations in order to ensure that all benchmark task objectives are not only completed, but completed within industry acknowledged timetables. Excessive absence in the workforce is a major reason for dismissal and student attendance habits may be verified by future employers reaching out to the Career Center for alumni references. Wilco will send a warning letter home

to notify students and parents that five days of school have been missed. After the tenth absence, a parent conference may be required, along with a reduction in letter grade and possibly resulting in an Administrative Attendance Contract. Continued absences may result in the student being dropped from Wilco, and the student receiving a failing grade. The only absences not included in the policy are those covered by a doctor's note, court document, or notification/verification of a family emergency or a death in the family.

· Excused absence: Students may make up work for credit but will have one day for every day absent from class plus one day to submit it.

· Unexcused absence: No credit for course work missed.

· Tardy to class: If a student is not in class by the late/second bell, the student will be considered tardy. The teacher will notify administration with a possible detention issued.

· School events: Students may be required to attend assemblies, field trips, and meetings at their home schools. Absence due to a school event is not factored into their Wilco absences.

· Suspensions: Students who are not in school because of disciplinary action may submit work in accordance with the excused absence policy.

Laboratory Maintenance:

Students are required to participate in laboratory maintenance (clean up) per shop policy/procedure. Maintaining shop organization and "housekeeping" is a routine part of the Industrial profession and Safe Shop Practices. If a student does not participate in laboratory maintenance during class periods points will be deducted from Class Participation scores. Clean up is inclusive of all workstations, shop floors and all equipment areas. Students are required to report any area or equipment found in an unsafe condition. Clean Up procedures will be detailed in class, posted in work areas and applied daily.

Student Code of Conduct:

Wilco Area Career Center is an educational extension of the home school. As an extension, Wilco maintains the policies of each school in combination with the policies developed by the Wilco Board of Control. The combined policies represent the discipline procedures that will be followed by the Wilco Staff, Faculty and Administration. The home school will be consulted/contacted on all discipline incidents. Disciplinary consequences will be the result of communication between the home school and Wilco's administration.

Three principles govern all discipline and regulations at Wilco Area Career Center:

1. *Conduct that is disruptive to the educational environment is prohibited.*

2. *Conduct that infringes on the rights of others is prohibited.*

3. *Conduct that is unsafe is prohibited*

Student Conduct expectations in the Welding Program are aligned to industry standards and students are expected to behave as if "they are on the job". This means that basic workplace decorum and

professional conduct is to be maintained while in class. Students are expected to be, at minimum, polite & courteous when interacting with staff, peers and visitors and respectful of the learning environment.

*Students shall **NOT***:

- Violate procedures outlined in the Student Handbook
- Bring in weapons or fabricate dangerous objects from shop materials
- Leave class/work areas without approval
- Remove PPE in Shop areas
- Modify, damage, remove or improperly use materials, tools or equipment
- Exit/enter through unapproved doors, prop open doors or allow unauthorized persons access to the building.
- Violate school driving policies (authorized transportation to & from Wilco only)
- Carry flammables, valuables or electronic devices in pockets into the Shop Areas

***The Welding Program has a Zero Tolerance policy on fighting, wrestling and/or "Horseplay". As an Industrial Worksite, safety hazards must be considered at all times, and any risky or violent behavior is extremely dangerous, and therefore STRICTLY prohibited at all times.**

****Use of cellular equipment (i.e. telephones) is not permitted in the lab areas, and classroom use is based on instructor approval and supervision. Students may be encouraged to use cellphones in class for research, job or technical reasons, but this is based on Instructor authorization. Earbuds & Headphones are strictly prohibited at all times.**

This list is not exhaustive and additional Policies & Procedures will be detailed in class and posted in work areas. Students are responsible for becoming familiar with all Policies & Procedures, and they shall make an effort to abide by them. Students in violation of Program policy or procedure will receive corrective instruction. Repeat violations may result in ongoing Disciplinary intervention

Disciplinary Procedures:

Student compliance with Wilco and Welding Program rules is expected, and infractions will result in some form of Academic or Administrative Intervention. All efforts will be made to resolve issues directly with the student through conversation and in-class strategies, however, when there are recurring or significant issues that can not be resolved by conventional approach, Instructors may begin Intervention Procedures. After a Verbal Redirection has been given and the behavior or condition persists, Instructors will:

1. document the behavior, adjust Performance Assessment scores
2. contact a parent to discuss behaviors and review strategies
3. report issues to school counselors & administrators and develop a Corrective Action Plan.
4. Upon implementing Action Plan disciplinary actions can include Student Contracts, Suspension and/or Expulsion from the program (depending on nature & severity).

E-Learning:

Students will be issued an email address (@wilcoacc.org domain) for all E-Learning activities. All communication and assignments must be completed using the "@wilcoacc.org" Profile.

E-learning & Remote activities will be used when in-class instruction is not authorized or available. All E-learning assignments are required coursework and must be completed by assigned dates for full credit. Late submission scores will be reduced by 10%. Confirmed Sick-Days will be added to the deadline date.Instructors will provide instructions for live meetings during class time when conditions require remote learning

Dual Credit Alignment with Joliet Junior College (JJC):

Students have an opportunity to earn college credit through Joliet Junior College Welding Technology Program. WLD-1 covers JJC course requirements for the WLDG 101 (Introduction to the Welding Processes, 3 credits) and MFG 115 (Blueprint Reading for Welding & Mfg., 3 credits) Earning credits is dependent on the student applying for admission and completing the registration form, the student fulfilling college prerequisites, and the student meeting the academic rigor of the course.

· Dual Credit requirements are set by the participating college. Students must meet all placement requirements before signing up for the college course.

· Students may participate in the coursework at Wilco and decline the dual credit. However, the work assigned will still be at a college level.

· Wilco instructors may drop students from Dual Credit if they are not meeting the academic requirements of the class with a grade of 'C' or higher or 80%.

· A student who does not perform at a passing rate in a dual credit course may jeopardize their college financial aid.

· Some of the credit offered is transferable to other institutions. Please visit http://www.itransfer.org/ for more information on transferring credits from one institution to another.

Course Outline & Competency:

Students will participate in classroom and lab assessments to gauge Technical Understanding and Shop Task proficiency. Lab assessments will be based on SMAW welds performed with 3/32" & 1/8" E6010 & E7018 electrodes. GMAW welds performed with .023" & .035" diameter ER70S-[*] wires in the Short Circuit or Globular transfer method. Proficiency will be demonstrated on A36 Carbon Steel, ranging in thickness at 22ga, 16ga, 1/8", 1/4", and up to 3/8" for SMAW & GMAW.WLD-1 students shall develop proficiency in the 1G and 2F welding positions. Students will develop a working understanding of Welding documents, blueprints, shop drawings and welding symbols used throughout the Industry

In order to receive full credit for the course, students are required to meet minimum degrees of proficiency & demonstrate competency in a variety of assigned tasks per JJC guidelines.

*WLD-I includes the following areas of study and associated Competency Task*s:

Semester 1:

- Shop and Arc Welding Safety (Academic Test: must pass to be authorized for Lab activity)
- Career Expectations & Demands, Workplace Skills Development, Roles & Responsibilities

- Industry Orientation: The American Welding Society (AWS) & related Regulatory Agencies
- Career Pathways: Apprenticeships, Entry-Level positions, and Military/Civic Pathways
- Job Skills: E-mail use, Resumes, Interviews, Job Search, and Performance Evaluations
- Welding Positions & Joint Configurations, Terms & Definitions, Procedures, Codes, Standards
- Process Fundamentals: Arc Welding Technology, Welding Processes, Circuits & Diagrams, Arc Theory, Welding Variables, Testing Methods
- (PAC) Plasma Arc Cutting: Manual Cuts: Flat Position: 22 gauge to ¼" thicknesses
- SMAW: Surfacing Welds, Flat & Horizontal Positions 1G, 2G
- SMAW: Square Butt-Joint, 1G
- SMAW: Corner Joint, Flat/horizontal Position 1F, 2F
- SMAW: T-Joint, single & multiple pass, Horizontal 2F
- Midterm Exams & Lab Proficiency Testing

Semester 2:

- Orientation: Terms, Definitions, Blueprints & Welding Symbols
- Career & Educational Planning (Guest Lectures & Presentations)
- Ongoing Education: Trade Schools & College Education Options
- Industry Orientation: Manufacturing Shop Exercise (Lab Activity)
- Process Fundamentals, Shop Tools & GMAW (Lab Activity)
- OFC: Oxy-Fuel Cut w/guide: 3/8" thickness
- GMAW: T-joint, single & multi-pass, Horizontal (2F) Position
- GMAW: Lap Joint, Vertical & Overhead Position (sheet metal)
- GMAW: Surfacing Welds, Horizontal Position (plate thickness)
- GMAW: Butt Joint Horizontal, Vertical & Overhead Position (sheet metal)
- Final Exams: Academic Testing & Practical/Hands-on Evaluation for full course competency