

Welding Assessment Plan Rev. 9/16/2018

| Welding | 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 |
|--|-------|-------|-------|-------|-------|-------|
| WELD B48WE - Occupational Work Experience Education/Internship | | | | | | |
| • Upon completion the student will be able to:Articulate the specific work experience objectives in Welding as described by employer and identify the various skills, knowledge and attitudes necessary to the accomplishment of those objectives. | | | P | | | |
| • Upon completion the student will be able to:Demonstrate the acquisition of the various skills, knowledge and attitudes necessary to the completion of the work experience objectives in Welding and the ability to effectively meet employer's job expectations. | | | P | | | |
| • Upon completion the student will be able to:Identify and analyze the application of acquired skills, knowledge and attitudes to career opportunities in Welding. | | | | P | | |
| WELDB1A - Introduction to Oxygen Acetylene Weldingand Cutting | | | | | | |
| • Upon completion of the course, the student will be able to demonstrate the ability to evaluate common shop and personal safety hazards in the work place. | | | | | P | |
| • apply the Oxy/Acetylene equipment principles for cutting and welding. | | | P | | | |
| • locate, manipulate, and solve welding math problems. | | | P | | | |
| • evaluate weld joint configurations, discontinuities, and defects. | | | P | | | |
| WELDB1B - Introduction to the Welding Processes | | | | | | |
| • Upon completion the student will be able to:demonstrate the ability to evaluate common shop and personal safety hazards in the work place. | | | | | P | |
| • Upon completion the student will be able to:setup the proper welding equipment for welding. | | | P | | | |
| • Upon completion the student will be able to:locate, manipulate, and solve welding math problems. | | | P | | | |
| • Upon completion the student will be able to:evaluate weld joint configurations, discontinuities, and defects. | | | P | | | |
| WELDB53A - Shielded Metal Arc Welding | | | | | | |
| • 1. Upon completion of the course the student should be able to demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools | | | P | | | |
| • 2. Upon completion of the course the student should be able to examine, recognize and demonstrate the application of welding equipment, filler metals, and apply this process to commonly used weld joints. | | | P | | | |
| • 3. Upon completion of the course the student should be able to locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch. | | | P | | | |
| • 4. Upon completion of the course the student should be able to employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |
| WELDB53B - Shielded Metal Arc Welding 2 | | | | | | |
| • Upon completion the student will be able to:SLO 1: Introduction to Welding The student will demonstrate an advanced understanding of welding in industry and how it affects our economy. | | | | | | P |
| • Upon completion the student will be able to: SLO 2: Safety Students will demonstrate lab safety, correct tool usage, and practice it. | | | P | | | |
| • Upon completion the student will be able to: SLO 3: SMAW Equipment Students will demonstrate the use of constant current equipment and explain how it is used. | | | P | | | |
| • Upon completion the student will be able to: SLO 4: SMAW Filler Material Students will differentiate between the various quick fill electrodes used in SMAW. | | | P | | | |
| • Upon completion the student will be able to: SLO 5: Weld Joint Design Students will illustrate lab joints and Tee joints. | | | | P | | |
| • Upon completion the student will be able to: SLO 6: Welding Certification Students will demonstrate an understanding of the difference between a weld defect and discontinuities. | | | | P | | |

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| WELDB54A - Blueprint Reading for Welders and Machinists | | | | | | |
| • Upon completion the student will be able to: SLO #1 Student will identify the meaning of views and lines as related to blueprint interpretation. 1. Illustrate the various lines used on working drawings. 2. Explain in writing the meaning of each line and how it is used. 3. Describe the various views used on working drawings. 4. Recognize the meaning of third angle projection. 5. Demonstrate the proper procedure for showing hidden features on a drawing. | | | | | P | |
| • Upon completion the student will be able to: SLO#2 Student will understand the concept of orthographic projection and its application to the development of blueprints. 1. Identify the U.S. customary order of orthographic views as related to third angle projection. 2. Demonstrate ability to sketch all orthographic views and place them in correct order. 3. Show ability to convert an orthographic view into an isometric or oblique sketch. 4. Show ability to convert an isometric or oblique view into a front, top, and right side orthographic view. 5. Construct a working drawing from various sample blocks. | C | | | | | |
| • Upon completion the student will be able to: SLO #3 Students will demonstrate knowledge of size descriptions and units of measure as related to blueprint interpretation. 1. List common units of measure used on working drawings. 2. Demonstrate ability to convert U.S. customary units of measure to the metric system. 3. Interpret limits and tolerances that are applied to dimensions. 4. Interpret and apply dimensions to threaded fasteners and tapped holes on prints. 5. Solve for unknown dimensions utilizing various dimension listed on working drawings. | | | | P | | |
| • Upon completion the student will be able to: SLO#4 Students will define and create sectional, auxiliary, and other views that are commonly used to represent detail and additional surfaces on blueprints. 1. Explain the need for creating a sectional view of parts to show detail hidden in the orthographic view. 2. Define, sketch and correctly place the auxiliary view to show slanted surfaces of objects for the purpose of showing detail in true shape. 3. Recognize the usage and meaning of other views including untrue projection, revolved views, and developed views. | | | P | | | |
| • Upon completion the student will be able to: SLO#5 Students will understand the relevance and importance of title blocks, notes and specifications that are applied to the blueprint. 1. Diagram a typical title block and input needed information required to create a part from the blueprint. 2. Differentiate between a local and general note. 3. Demonstrate ability to locate, interpret, and create local and general notes needed for expressing necessary detail on blueprints. 4. Explain the usage of scale sizes that are applied to prints and create a scale size for a drawing. | | | P | | | |
| • Upon completion the student will be able to: SLO#6 Students will understand the manner in which threaded fasteners are called out on a blueprint. 1. Illustrate the detailed, conventional, and simplified methods in which internal and external threads are drawn on prints. 2. Apply customary dimensioning methods to threads including coarse, fine, metric, and pipe threads. 3. Demonstrate knowledge of various elements of threads including nominal diameter, threads per inch, type of thread, class of fit, and direction of thread. | | | P | | | |
| • Upon completion the student will be able to: SLO#7 Students will be familiar with welding symbols that are applied to parts and objects on the blueprint for fabrication. 1. Demonstrate ability to describe and sketch components of welding symbol including the arrow, reference line, and tail section. 2. Identify and apply weld, groove, and finish symbols to the reference line of the welding symbol. 3. Interpret all dimensions that are applied to welding symbol including length, pitch, size, angle, and depth of welds and grooves. 4. Realize and interpret specifications and references found in the tail section including welding process and weld procedure to be implemented. | | | P | | | |
| WELDB54B - Template Development and Layout for the Welder | | | | | | |
| • Upon completion the student will be able to: Students will demonstrate the recognition and understand of various fittings used in industry for piping offsets. 2. Students will examine and demonstrate the recognition and application of Trigonometry and Pythagorean to solve Right Triangles as they are | | | | | | P |
| • Upon completion the student will be able to: 2. Students will examine and demonstrate the recognition and application of Trigonometry and Pythagorean to solve Right Triangles as they are related to structural and pipe offsets. | | | P | | | |
| • Upon completion the student will be able to: 3. Students will locate, manipulate, and solve math problems that pertain to geometric shapes based on the U.S. customary inch. | | | P | | | |
| • Upon completion the student will be able to: 4. Students will utilize acquired skills as a means to identify, illustrate, and apply knowledge of piping configurations and their application to standards used in industry. | | | | P | | |
| WELDB55A - Structural Plate Certification I | | | | | | |
| • Upon Completion of the course, the student will be able to demonstrate the ability to evaluate common shop and personal safety hazards in the work place. | | | | | | P |
| • Apply equipment principles for welding and cutting. | | | P | | | |
| • Locate, manipulate, and solve math problems. | | | P | | | |
| • Evaluate weld joint configurations, discontinuities and defects. | | | P | | | |

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WELDB55B - Structural Plate Certification II

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| • Upon completion the student will be able to: SLO 1: Introduction to Welding The students will demonstrate correct safety while cutting and welding. | | | | | | P |
| • Upon completion the student will be able to: SLO 10: AWS D1.1 Students will demonstrate how to properly prepare and setup a AWS D1.1 3G & 4G test. | | | P | | | |
| • Upon completion the student will be able to: SLO 2: Safety Students will understand the concept of safety, correct tool usage, and practice it. | | | P | | | |
| • Upon completion the student will be able to: SLO 3: SMAW & FCAW Equipment Students will demonstrate the correct use of SMAW& FCAW equipment. | | | P | | | |
| • Upon completion the student will be able to: SLO 4: SMAW & FCAW Filler Material Students will demonstrate the correct use and application of various filler materials used in SMAW & FCAW. | | | P | | | |
| • Upon completion the student will be able to: SLO 5: Weld Joint Design Students will explain and demonstrate the most commonly used weld joint designs used for AWS D1.1. | | | P | | | |
| • Upon completion the student will be able to: SLO 6: Testing and Inspection Students will evaluate different methods of testing weld coupons. | | | P | | | |
| • Upon completion the student will be able to: SLO 7: SMAW & FCAW Plate Welding Students will describe the proper setup and use of track and hand cutting equipment. | | | | P | | |
| • Upon completion the student will be able to: SLO 8: Welding Certification Students will distinguish discontinuities that render a weld defective. | | | | P | | |
| • Upon completion the student will be able to: SLO 9: Welding Codes Students will understand how codes are used in industry. | | | | P | | |

WELDB55C - ASME Pipe Certification

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|--|--|--|---|--|--|--|
| • 1. Upon completion of the course the student should be able to demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools. | | | P | | | |
| • 2. Upon completion of the course the student should be able to examine, recognize and demonstrate the application of welding equipment, filler metals, and apply this process to commonly used weld joints | | | P | | | |
| • 3. Upon completion of the course the student should be able to locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch. | | | P | | | |
| • 4. Upon completion of the course the student should be able to will employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |

WELDB55D - ASME Pipe Certification

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|---|--|--|---|--|--|--|
| • 1. Upon completion of the course the student should be able to demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools. | | | P | | | |
| • 2. Upon completion of the course the student should be able to examine, recognize and demonstrate the application of welding equipment, filler metals, and apply this process to commonly used weld joints. | | | P | | | |
| • 3. Upon completion of the course the student should be able to locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch | | | P | | | |
| • 4. Upon completion of the course the student should be able to employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |

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| WELDB55E - API and Related Certification Testing | | | | | | |
| • 1. Introduction to Pipe Welding The student will understand how piping is used in industry and how it affects our economy. | | | | P | | P |
| • 2. Safety Students will understand the concept of safety, correct tool usage, and apply safe work habits in the lab environment. | C | | | | | |
| • 3. SMAW Equipment Students will understand, explain, and demonstrate the use of SMAW welding equipment. | | | P | | | |
| • 4. SMAW Filler Material Students will understand and apply the various filler materials used in SMAW of pipe. | | | P | | | |
| • 5. Weld Joint Design Students will understand and prepare the most commonly used weld joint designs for piping. | | | P | | | |
| • 6. Testing and Inspection Students will describe different methods of testing pipe welds. | | | P | | | |
| • 7. SMAW Pipe Welding Students will distinguish basic electrical terms like: amperage, volts, resistance, polarity, and ground as it relates to pipe welding. | | | P | | | |
| • 8. Welding Certification Students will demonstrate how a welder is certified to a welding procedure. | | | P | | | |
| • 9. Welding Codes Students will distinguish the relationship of codes to the welds being made. | | | | P | | |
| • 10. API 1104 Students will explain and demonstrate how to properly prepare and setup a 6G test according to the American Petroleum Institute's 1104 code for 3" schedule 80 mild steel pipes. | | | | P | | |
| WELDB55F - API and Related Certification Testing | | | | | | |
| • 1. Upon completion of the course, the student will be able to demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools. | | | P | | | |
| • 2. Upon completion of the course, the student will be able to examine, recognize and demonstrate the application of welding equipment, filler metals, and apply this process to commonly used weld joints. | | | P | | | |
| • 3. Upon completion of the course, the student will be able to locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch. | | | P | | | |
| • 4. Upon completion of the course, the student will be able to employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |
| WELDB65AB - Welded Steel Structures | | | | | | |
| • Upon completion the student will be able to: Students will demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools. | | | | P | | P |
| • Upon completion the student will be able to: 2. Students will examine, recognize and demonstrate the application of GMAW welding equipment, filler metals, and apply this process to commonly used weld joints. | | | P | | | |
| • Upon completion the student will be able to: 3. Students will locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch. | | | P | | | |
| • Upon completion the student will be able to: 4. Students will employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |
| WELDB74A - Introduction to GMAW (Gas Metal Arc Welding) and FCAW (Flux Core Arc Welding) | | | | | | |
| • Upon completion the student will be able to: SLO 1: Introduction to Welding The will understand how welding is used in industry and how it affects our economy. | | | | | | P |
| • Upon completion the student will be able to: SLO 2: Safety Students will understand the concept of safety, correct tool usage, and practice it. | C | | | | | |
| • Upon completion the student will be able to: SLO 3: GMAW Equipment Students will understand the use of GMAW equipment and explain how it is used. | | | P | | | |
| • Upon completion the student will be able to: SLO 4: GMAW Filler Material Students will understand the various filler materials used in GMAW. | | | P | | | |
| • Upon completion the student will be able to: SLO 5: Weld Joint Design Students will understand the most commonly used weld joint designs. | | | P | | | |
| • Upon completion the student will be able to: SLO 6: Testing and Inspection Students will understand different methods of testing welds. | | | P | | | |
| • Upon completion the student will be able to: SLO 7: P-GMAW Students will explain the proper application and use of Pulse-GMAW. | | | P | | | |
| • Upon completion the student will be able to: SLO 8: FCAW Students will demonstrate the use of FCAW equipment and explain how it is used. | | | P | | | |
| • Upon completion the student will be able to: SLO 9: AWS D1.1 Students will understand how to properly prepare and setup a 3G & 4G test. | | | | P | | |

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| WELDB74B - Introduction to Gas Tungsten Arc Welding | | | | | | |
| <ul style="list-style-type: none"> 1. Upon completion of the course the student will be able to demonstrate an understanding through the application of safety concepts as they are related to welding equipment, cutting equipment, shop equipment, and hand tools. | | | P | | | |
| <ul style="list-style-type: none"> 2. Upon completion of the course the student will be able to examine, recognize and demonstrate the application of welding equipment, filler metals, and apply this process to commonly used weld joints. | | | P | | | |
| <ul style="list-style-type: none"> 3. Upon completion of the course the student will be able to will locate, manipulate, and solve math problems that pertain to welding projects based on the U.S. customary inch | | | P | | | |
| <ul style="list-style-type: none"> 4. Upon completion of the course the student will be able to employ acquired skills to identify, illustrate, and apply knowledge of weld joint configurations, discontinuities, and defects and their application to welding codes. | | | P | | | |