



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**SHIELDED METAL ARC WELDING/PIPE
WEL3632 3 Credit Hours**

Student Level:

This course is open to students on the college level in either the freshman or sophomore year and to area high school vocational students.

Catalog Description:

WEL 3632 - SHIELDED METAL ARC WELDING/PIPE (3 hrs)

This course offers the student an opportunity to gain the skills required to produce code quality welds on piping materials. These welds are expected to pass guided bend tests to detect flaws.

Prerequisites:

WEL3613 Shielded Metal Arc Welding/Structural or equivalent.

Controlling Purpose:

Students in this course are expected to become proficient in the S.M.A.W. process on pipe.

Learner Outcomes:

Students in this course will be making code quality welds on a number of different diameters of pipe using the Shielded Metal Arc Welding process. These welds are to be made in various positions with a variety of electrodes.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

- A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.
- B = All major goals have been achieved, but the student has failed to achieve some of the

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less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.

- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

UNIT 1: Welding Safety Review						
Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate safety procedures.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Assess the potential hazards in S.M.A.W. pipe welding.
						Indicate procedures for making pipe welding safe.

UNIT 2: Electrode Classification For Pipe Welds						
Outcomes: Upon completion of this unit, the students will be able to successfully prepare pipe coupons of welding with S.M.A.W.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Associate the correct electrode classifications with various alloys of pipe.
						Differentiate classification according to procedure requirements.

UNIT 3: Material Preparation For Pipe Welds

Outcomes: Upon completion of this unit, the students will be able to successfully make pipe welds in the flat position with E6010.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Analyze 4 different methods of preparation for S.M.A.W. pipe weld.
						Prepare pipe coupons for S.M.A.W. of pipe.

UNIT 4: Pipe Welding With E6010 Electrodes

Outcomes: Upon completion of this unit, the students will be able to successfully make pipe welds in the horizontal position with E6010.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Justify the use of E6010 electrodes in pipe welding.
						Demonstrate the correct use of E6010 electrodes in pipe welding.

UNIT 5: Pipe Welding With E7018 Electrodes

Outcomes: Upon completion of this unit, the students will be able to successfully make pipe welds in the vertical up position with E7018 electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Justify the use of E7018 electrodes in pipe welding.
						Demonstrate the correct use of E7018 electrodes in pipe welding.

UNIT 6: Pipe Welding In The 6G Condition

Outcomes: Upon completion of this unit, the students will be able to successfully make pipe welds in the vertical up position with E6010 E-7018 electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Assess the benefits of training pipe welders in the 6G position.
						Demonstrate the ability to make pipe welds in the 6G position.

UNIT 7: Certification Requirements For Pipe Welding

Outcomes: Upon completion of this unit, the students will be able to successfully pass certification for pipe welding.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Assess the requirements for certification of pipe welders using S.M.A.W.
						Prepare a procedure qualification document for pipe using S.M.A.W. requirements.

Projects Required:

As assigned.

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

Personal safety equipment and tools

Attendance Policy:

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:

The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:

Based on classroom occupancy

Course Timeframe:

The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit

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hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

Disability Services Program:

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.