



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**SHIELDED METAL ARC WELDING/STRUCTURAL
WEL3613 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 3613 SHIELDED METAL ARC WELDING/STRUCTURAL (3 hrs)

Students in this course receive instruction and gain the necessary skills to produce sound welds on ferrous structural shapes in various positions. Students will prepare a number of different joint configurations used in industry. Welds will be made with several different electrodes using the Shielded Metal Arc welding equipment.

Prerequisites:

None

Controlling Purpose:

Students in this course should become proficient in S.M.A.W. process on structural shaped materials using several different electrode classifications and joint configurations.

Learner Outcomes:

Upon completion of this course students will be able to prepare various structural shapes into common joint configurations and successfully make welds with several different electrodes and directions of travel.

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

Rev: 6/01/2016

DISCLAIMER: THIS INFORMATION IS SUBJECT TO CHANGE. FOR THE OFFICIAL COURSE PROCEDURE CONTACT ACADEMIC AFFAIRS.

- 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 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 student will be able to successfully pass a written safety test concerning SMAW equipment.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Demonstrate the ability to set up and operate equipment safely.
						Identify potential hazards in S.M.A.W. equipment.

UNIT 2: S.M.A.W. Electrode Classifications And Their Capabilities

Outcomes: Upon completion of this unit, the student will be able to successfully select electrodes for S.M.A.W. using A.W.S. classifications for base metal and joint configurations.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Differentiate S.M.A.W. electrodes by A.W.S. classification.
						Associate S.M.A.W. classifications with base metals and joint criteria.

UNIT 3: Preparing Various Structural Shapes For S.M.A.W.

Outcomes: Upon completion of this unit, the student will be able to successfully prepare base metal specimens for welding.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Outline various methods and processes for preparing material.
						Prepare specimens for welding per S.M.A.W. requirements.

UNIT 4: Welding With E6010 Electrodes

Outcomes: Upon completion of this unit, the students will be able to successfully make welds.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the uses of E6010 and its capabilities.
						Demonstrate the ability to make qualification welds with E6010.

UNIT 5: Welding With E6012 Electrodes

Outcomes: Upon completion of this unit, the student will be able to successfully make welds using E6012 electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the uses of E6012 and its capabilities.
						Demonstrate the ability to make qualification welds with E6012.

UNIT 6: Welding With E6013 Electrodes

Outcomes: Upon completion of this unit, the student will be able to successfully make welds using E6013 electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the uses of E6013 and its capabilities.
						Demonstrate the ability to make qualification welds with E6013.

UNIT 7: Welding With E7018 Electrodes

Outcomes: Upon completion of this unit, the student will be able to successfully make welds using E7018 electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the uses of EXX18, low hydrogen groups electrodes.
						Demonstrate the ability to make qualification welds using E7018.

UNIT 8: Welding With E2XX-15/16 Electrodes

Outcomes: Upon completion of this unit, the student will be able to successfully make welds using E3XX-15/16 stainless steel electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the uses of E3XX-15/16 and its capabilities.
						Demonstrate the ability to make qualification welds using E3XX-15/16 electrodes.

UNIT 9: Certification Requirements For Welders Using S.M.A.W.

Outcomes: Upon completion of this unit, the student will be able to successfully pass a qualification test on plate using the S.M.A.W. process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify certification requirements of S.M.A.W.
						Prepare generalized qualification examinations for structural material using the guided bend test method.

Projects Required:

As assigned.

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

Personal safety gear and hand 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 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.