



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**BASIC WELDING PROCESSES
WEL3615 3Credit 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 3615 - BASIC WELDING PROCESSES (3 hrs)

This lecture course is arranged to study the basic practices of various forms of electric arc and oxy-acetylene cutting and welding. Safety is emphasized in the use and care of equipment.

Prerequisites:

No previous welding experience required. Testing by appointment with instructor approval.

Controlling Purpose:

This course is devised to introduce the student to the various welding processes used in industry for fabrication and repair of equipment.

Learner Outcomes:

Upon completion of this course the student will pass written tests on: weld shop safety, basic gas and arc welding, arc welding electrodes and filler wires, and basic welding metallurgy. The student will develop basic manipulative skills in: SMAW (shielded metal arc welding), OAW (oxy-acetylene welding), OAC (oxy-acetylene, cutting), and use of common layout tools.

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

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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: Introduction To Welding

Outcomes: Upon completion of this unit, the student will be able to successfully identify the various welding processes used in today' industry..

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify different processes used in industry.
						Evaluate occupational opportunities in welding.

UNIT 2: Basic Welding Safety

Outcomes: Upon completion of this unit, the student will be able to successfully identify unsafe conditions and practices.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify unsafe conditions and practices.
						Set-up and operate shop equipment to safe standards.

UNIT 3: Oxy-Acetylene Cutting And Welding Equipment

Outcomes: Upon completion of this unit, the student will be able to successfully show the proper procedure for using oxy-acetylene equipment safely.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Set up oxy-fuel cutting and welding torch assemblies.
						Associate various joint configuration and the proper methods of joining them.

UNIT 4: Shielded Metal Arc Welding Equipment Set-Up And Operation

Outcomes: Upon completion of this unit, the students will be able to successfully identify various S.M.A.W. power sources and electrodes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Demonstrate proper equipment set-up for safe welding practices.
						Select proper electrodes to match position of welding and base metal.

UNIT 5: Shielded Metal Arc Welding Of Plate Steel

Outcomes: Upon completion of this unit, the student will be able to successfully identify proper techniques for joining metals using S.M.A.W.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Associate various joint configurations with means of preparation.
						Explain methods used to produce sound welds in all positions.

UNIT 6: Gas Metal Arc Welding Equipment Set-Up And Operation

Outcomes: Upon completion of this unit, the student will be able to successfully identify various G.M.A.W. power sources and filler wires.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Show how to set up equipment for safe welding practices.
						Classify various gases used in G.M.A.W. and explain the results of metal transfer across the arc.

UNIT 7: Flux Cored Arc Welding Equipment, Set-Up And Operation

Outcomes: Upon completion of this unit, the student will be able to successfully identify conditions which F.C.A.W. may be used in fabrication.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Outline the differences in G.M.A.W. and F.C.A.W.
						Explain the advantages and disadvantages of F.C.A.W.

UNIT 8: Gas Tungsten Arc Welding Equipment, Set-Up And Operation

Outcomes: Upon completion of this unit, the student will be able to successfully identify G.T.A.W. equipment and explain its function as a welding process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Set up G.T.A.W. equipment.
						Assess the advantages and disadvantages of G.T.A.W. vs S.M.A.W. and G.M.A.W. processes.

UNIT 9: Welding Metallurgy

Outcomes: Upon completion of this unit, the student will be able to successfully identify various metal and alloy groups.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify physical properties of common metals used in manufacturing and their alloying contents.
						Point out how alloying elements affect physical properties.

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.