



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**GAS METAL ARC WELDING/PIPE
WEL3633 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:

WEL3633 - GAS METAL ARC WELDING/PIPE (3 hrs)

This course is designed to offer students the opportunity to produce code quality welds on various diameters of pipe. These welds are to be produced using the gas metal arc welding process. Welds made with these procedures will be tested using the guided bend test to detect flaws.

Prerequisites:

WEL3622 GMAW (Gas Metal Arc Welding/Structural) or equivalent.

Controlling Purpose:

Students in this class are expected to become proficient in welding pipe in a variety of positions using G.M.A.W.

Learner Outcomes:

Students in this course will be able to produce code quality welds using the Gas Metal Arc Welding Method on piping materials. These welds will be made in a variety of positions using the short circuit metal transfer and flux core methods.

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 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 demonstrate safety procedures.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Access the potential hazards for G.M.A.W. pipe welding.
						Demonstrate how to set-up and safely operate G.M.A.W. equipment for pipe welding.

UNIT 2: Prepare Material for G.M.A.W. Pipe Welds						
Outcomes: Upon completion of this unit the student will be able to successfully prepare pipe coupons for welding with G.M.A.W.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Analyze four different methods of preparation for G.M.A.W.
						Prepare pipe coupons for G.M.A.W. of pipe, using two of these methods.

UNIT 3: Electrode Classification and Shielding Gases

Outcomes: Upon completion of this unit, the student will be able to successfully weld pipe with G.M.A.W. in flat position.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Associate the correct electrode classification and shielding gases for various alloys of pipe for the G.M.A.W. process.
						Contrast the efficiencies of pipe welding with G.M.A.W. with that of S.M.A.W.

UNIT 4: Rolling Pipe Welds in Flat Position

Outcomes: Upon completion of this unit, the students will be able to successfully weld pipe with G.M.A.W. in vertical fixed position.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Examine equipment requirements for position welding of pipe.
						Demonstrate the correct procedures for making rolling pipe welds with G.M.A.W. equipment.

UNIT 5: G.M.A.W. Pipe Welds in Vertical Position

Outcomes: Upon completion of this unit, the students will be able to successfully weld pipe with G.M.A.W. in vertical position.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Analyze the difference in parameters for rolling position welds, as compared to fixed position welds.
						Demonstrate how to make G.M.A.W. pipe welds in the vertical fixed position.

UNIT 6: G.M.A.W. Pipe Welds in Horizontal Position

Outcomes: Upon completion of this unit, the students will be able to successfully weld pipe with G.M.A.W. in horizontal fixed position.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Generate the criteria for making horizontal fixed position welds using G.M.A.W.
						Demonstrate how to correctly make horizontal G.M.A.W. pipe welds.

UNIT 7: G.M.A.W. Pipe Welds in 6G Position

Outcomes: Upon completion of this unit, the students will be able to successfully weld pipe with G.M.A.W. in 6G position up hill.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Compare text procedures of 6G position and compare this with other positions.
						Demonstrate how to correctly make G.M.A.W. welds in the 6G position.

UNIT 8: Certification Requirements for G.M.A.W. Processes

Outcomes: Upon completion of this unit, the students will be able to successfully pass certification requirements for G.M.A.W. processes.

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

Projects Required:

As assigned.

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

Students are required to furnish their own Personal Protection Equipment ie Safety Glasses.

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 Time Frame:

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.