



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**GMAW (GAS METAL ARC WELDING/STRUCTURAL)
WEL3622 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 3622 – GMAW (GAS METAL ARC WELDING/STRUCTURAL) (3 hrs)

This course offers the student the knowledge and necessary skills to produce code quality welds using a variety of wire and gas combinations common to industry for fabrication purposes.

Prerequisites:

None

Controlling Purpose:

Students in this class are expected to become proficient in Gas Metal Arc Welding techniques on structural shaped materials using various electrodes and shielding gases.

Learner Outcomes:

Students in this course will develop skills in the use and care of Gas Metal Arc Welding equipment. Specific methods will be followed to produce quality welds common to industry using a variety of shielding gases and filler wire electrodes. These welds will be made in several different positions and metal transfer 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.

Rev: 6/01/2016

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

- 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 students will be able to successfully pass a written safety test concerning G.M.A.W.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify potential hazards in G.M.A.W.
						Demonstrate the ability to set-up G.M.A.W. equipment and operate safely.

UNIT 2: G.M.A.W. Electrode Classifications And Their Capabilities						
Outcomes: Upon completion of this unit, the students will be able to successfully select filler wires according to base metal chemistry.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Compile a list of A.W.S. approved filler wires for various alloys.
						Define the appropriate gas mixtures used in G.M.A.W.

UNIT 3: Preparing Various Structural Shapes for G.M.A.W.

Outcomes: Upon completion of this unit, the students will be able to successfully prepare base metals for G.M.A.W.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Associate various alloys and the methods used to prepare them.
						Prepare specimens for welding with G.M.A.W.

UNIT 4: GMAW Using .023 DIA E70S-6

Outcomes: Upon completion of this unit, the students will be able to successfully make welds using short arc metal transfer with several diameter filler wires .023 E70S-6.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the range of materials that can be welded with .023 diameter filler wires.
						Show how to make qualification welds using .023 diameter wire.

UNIT 5: GMAW Using .035 DIA E70S-6

Outcomes: Upon completion of this unit, the students will be able to successfully make welds using short arc and spray metal transfer with several different shielding gases.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the range of materials that can be welded with .035 dia filler wire.
						Demonstrate the ability to make qualification welds using .035 wire.

UNIT 6: E70S-6 (Spray)

Outcomes: Upon completion of this unit, the students will be able to successfully produce welds in various positions using .045 E70S-6 filler wires.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify uses of .045 diameter filler wires in industry.
						Show how to set-up G.M.A.W. equipment for spray welding.
						Demonstrate the ability to make qualification welds using spray type transfer.

UNIT 7: G.M.A.W. Using .045 DIA E70T-1 (Spray)

Outcomes: Upon completion of this unit, the students will be able to successfully make Flux Core arc welds with several different types of filler wires.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify uses of EXXT filler wires for industry.
						Show how to set-up G.M.A.W. equipment for E70T-1 wire.
						Demonstrate the ability to make qualification welds using E70T-1 filler wire.

UNIT 8: Certification Requirements For G.M.A.W.

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

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Assess the requirements for certification using EXXS-X filler wire.
						Prepare procedure qualification documentation for EXXS-X filler wires.

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 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.