



**COWLEY COLLEGE  
& Area Vocational Technical School**

**COURSE PROCEDURE FOR**

**GAS TUNGSTEN ARC WELDING/PIPE  
WEL3642 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:**

**WEL3642 – GAS TUNGSTEN ARC WELDING/PIPE (3 hrs)**

Students in this course will be expected to pass qualification procedures in pipe welding using the gas tungsten arc welding process. Welds made in various positions will be subject to guided bend test or x-ray examination to detect flaws.

**Prerequisites:**

WEL3623 GTAW (Gas Tungsten Arc Welding/Structural) or equivalent.

**Controlling Purpose:**

Students in this course will be exposed to welding chemistry and metallurgy, automated welding systems and maintenance of equipment.

**Learner Outcomes:**

Students in this course will be expected to pass qualification procedures in pipe welding using the Gas Tungsten Arc Welding process. Welds made in various positions will be subject to guided bend test and x-ray examination to detect flaws.

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.

<b>UNIT 1: Welding Safety Review</b>						
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:
						Assess the potential hazards in G.T.A.W. of pipe.
						Demonstrate how to set-up and safely operate G.T.A.W. equipment for pipe welding.

<b>UNIT 2: Prepare Material For G.T.A.W.</b>						
Outcomes: Upon completion of this unit, the student will be able to successfully prepare pipe coupons for welding with G.T.A.W.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Prepare pipe coupons for G.T.A.W.
						Show how to fit-up and tack weld coupons using the G.T.A.W. process.

**UNIT 3: Electrode Classification, Filler Wires, and Shielding Gases**

Outcomes: Upon completion of this unit, the student will be able to successfully make pipe welds in flat position with carbon steel fillers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Associate the correct filler metals and shielding gases for various alloys of pipe for the G.T.A.W. process.

**UNIT 4: G.T.A.W. Pipe Welds in Horizontal Positions**

Outcomes: Upon completion of this unit, the student will be able to successfully make pipe welds in horizontal positions with carbon steel fillers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Show how to manipulate torch and filler wire for horizontal G.T.A.W. pipe welds.
						Demonstrate the correct procedures for making pipe welds in the horizontal positions using G.T.A.W.

**UNIT 5: G.T.A.W. Pipe Welds in Vertical Positions**

Outcomes: Upon completion of this unit, the student will be able to successfully make pipe welds in vertical position with carbon steel fillers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Show how to manipulate torch and filler wire for vertical G.T.A.W. pipe welds.
						Demonstrate the correct procedure for making vertical pipe welds using G.T.A.W.

**UNIT 6: G.T.A.W. Pipe Welds in 6G Position**

Outcomes: Upon completion of this unit, the student will be able to successfully weld pipe with G.T.A.W. in the 6G position up-hill with carbon steel pipe.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Demonstrate the correct procedure for making G.T.A.W. pipe weld in the 6G position.

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

Outcomes: Upon completion of this unit, the student will be able to successfully weld pipe with G.M.A.W. in the 6G position up-hill with stainless steel filler metal.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Demonstrate the correct procedure for adding fill and final pass welds on pipe in the 6G position with stainless steel filler metals.

**UNIT 8: Certification Requirements for G.T.A.W. Processes**

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

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

**Projects Required:** As assigned.

**Textbook:**

Contact Bookstore for current textbook.

**Materials/Equipment Required:**

None

**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.