COWLEY COLLEGE
& Area Vocational Technical School

COURSE PROCEDURE FOR

ARC WELDING PROCESSES
WEL3635 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 3635 - ARC WELDING PROCESSES (3 hrs)
This course is designed to expose the student to materials used in analyzing the equipment needs of specific processes of manufacturing. This course also deals with welding codes and standards, and cost estimating.

Prerequisites:
None

Controlling Purpose:
This course is designed to allow students to identify and practice various arc welding methods used in today's industry for fabrication of equipment and machinery.

Learner Outcomes:
Upon completion of this course students will be able to analyze equipment needs for specific procedures or processes. These processes may range from manual to automatic cutting and welding applications.

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.

UNIT 1: Shielded Metal Arc Welding

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate how to select a power source for S.M.A.W.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Analyze various power sources and their capabilities for S.M.A.W.
						Explain where and how to use the various equipment in applications relating to fabrication and maintenance welding with S.M.A.W.
						Perform safety inspections of equipment and accessories.
						Make minor external repairs to equipment as needed.

UNIT 2: Gas Metal Arc Welding

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate how to select a power source and wire feed system for G.M.A.W.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Indicate the process requirements for G.M.A.W.
						Contrast these with similar G.M.A.W. variables.
						Demonstrate proper set-up procedures for welding on carbon steel.

N = No instruction or training in this area.

UNIT 3: Gas Tungsten Arc Welding

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate how to select all equipment required to set-up for G.T.A.W.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Indicate the process requirements for G.T.A.W.
						Associate the proper use of filler metals with alloys in G.T.A.W.
						Demonstrate proper set-up procedures for welding on carbon steel, aluminum, and stainless steels.

UNIT 4: Fluxed Core Arc Welding

Outcomes: Upon completion of this unit, the students will be able to successfully explain in detail the various flux-cored wires used in fabrication.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Identify similarities in equipment and consumables to G.M.A.W.
						Explain the advantages and disadvantages of this process in fabrication today.
						Demonstrate proper set-up procedures for welding on carbon steel.

UNIT 5: Carbon Arc Gouging

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate how to select all equipment required to set-up for carbon arc gouging process.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Indicate how and where carbon arc is used in welding.
						Select equipment requirements for set-up of equipment.
						Set-up equipment for carbon arc gouging.
						Practice gouging on carbon and stainless materials.

UNIT 6: Plasma Arc Cutting/Welding Outcomes: Upon completion of this unit, the students will be able to successfully explain how plasma arc cutting and welding equipment work and its use in industry.						
A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Compare equipment requirements with other cutting processes.
						Set-up equipment and demonstrate process variables.
						Demonstrate safe cutting practices for carbon steel, stainless steel, and aluminum.

UNIT 7: Welding Codes And Standards Outcomes: Upon completion of this unit, the students will be able to successfully identify methods of inspection and testing used in industry.						
A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Analyze capabilities of various test methods.
						Visually examine prepared surfaces of base metals and detect flaws.

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.