



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**AGRICULTURAL CONSTRUCTION & WELDING
AGR1214 3 Credit Hours**

Student Level:

This course is open to students on the college level in either the Freshman or Sophomore year.

Catalog Description:

AGR1214 - AGRICULTURAL CONSTRUCTION & WELDING (3 hrs)

This course is designed to provide the student with the theory, knowledge, and skill necessary for construction and/ or fabrication of metal projects. Emphasis will be placed on; Laboratory safety, general laboratory measurements, metal identification and characteristics, oxyacetylene welding and cutting, shielded metal arc welding(SMAW), gas metal arc welding(GMAW), gas tungsten arc welding (GTAW), plasma cutting and project construction.

Prerequisites:

None

Co-requisites:

None

Controlling Purpose:

The purpose of this this course is to provide the student with the theory, knowledge, and skill necessary for construction and/ or fabrication of metal projects. Emphasis will be placed on; Laboratory safety, general laboratory measurements, metal identification and characteristics, oxyacetylene welding and cutting, shielded metal arc welding(SMAW), gas metal arc welding(GMAW), gas tungsten arc welding (GTAW), plasma cutting and project construction.

Learner Outcomes:

Upon completion of the course, the student will:

1. Demonstrate the use and inspection of personal protection equipment (PPE) and general safety.
2. Demonstrate proper oxy-acetylene start-up, shut-down, and cutting procedures.
3. Demonstrate correct set up and procedure for SMAW and GMAW welding.
4. Demonstrate correct set up and procedure for GTAW welding.
5. Demonstrate proper application of welding processes to fabricate, repair, alter or modify farm structures or equipment.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following outline defines the minimum core content not including the final examination period. Instructors may add other material 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: Safety Procedures						
Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate the use and inspection of personal protection equipment (PPE) and general safety.						
A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Identify and demonstrate proper use of hand tools and power equipment in a welding environment
						Explain and implement the importance of housekeeping.
						Demonstrate the use and inspection of personal protection equipment (PPE).
						Administer proper ventilation equipment and resources.
						Observe proper Hot Zone operation.
						Identify precautions for working in confined spaces.
						Illustrate and implement proper handling of cylinders and gases.
						Identify electrical and eye hazards in arc welding.

UNIT 2: Cutting Torch Procedures

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate proper oxy-acetylene start-up, shut-down, and cutting procedures.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Perform all oxy-fuel processes and bottle handling according to safety procedures.
						Demonstrate compliance with regulations, including safe work practices.
						Identify characteristics and/or correct use of pressure regulator valves, hoses and tips.
						Demonstrate proper flame settings.
						Assemble oxy-fuel welding equipment and identify components.
						Demonstrate proper start up and shut down procedures.
						Identify welding positions and joints.
						Demonstrate oxy-fuel welds.
						Demonstrate brazing and soldering.
						Define Plasma Arc cutting.

UNIT 3: SMAW and GMAW Procedures

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate correct set up and procedure for SMAW and GMAW welding.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Select correct SMAW and GMAW machines and processes.
						Identify, select, and safely handle shielded gases for various transfer modes.
						Adjust voltage; wire feed rate, and gas flow.
						Identify, correctly select, and set up equipment.
						Identify wire electrodes for various metals.
						Complete welds on various weld joints.
						Identify welding discontinuities and correct.

UNIT 4: GTAW Procedures

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate correct set up and procedure for GTAW welding.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Describe the operation and assembly of attachments to power sources.
						Demonstrate proper uses and settings of welding currents and polarities.
						Describe the types and sizes of tungsten electrodes.
						Describe types and characteristics of shielding gases used in the GTAW process.
						Perform safety inspections of GTAW equipment and accessories.
						Demonstrate GTAW on Aluminum and Stainless.

UNIT 5: Application of Knowledge

Outcomes: Upon completion of this unit, the students will be able to successfully demonstrate proper application of welding processes to fabricate, repair, alter or modify farm structures or equipment.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Use appropriate clamping devices and techniques to secure materials in proper position for the fabrication of farm equipment and/or structures.
						Use appropriate welding materials and processes to fabricate farm structures and/or equipment.
						Use appropriate materials and processes to repair farm equipment and/or structures.
						Use proper welding processes and materials to alter and/or modify farm structures and/or equipment.
						Identify specific safety and hazard concerns regarding welding in typical and atypical agricultural settings.
						Demonstrate proper safety procedures to assure safety of property, equipment, other persons and personal well-being when utilizing welding processes in typical and atypical agricultural settings.

Projects Required:

Varies, refer to syllabus.

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

Students may be required to furnish their own protective clothing, welding gloves, and eye protection equipment.

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 and which requires accommodations, contact the Disability Services Coordinator.