



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**INDUSTRIAL MATERIALS
INR3760 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:

INR 3760 - INDUSTRIAL MATERIALS (3 hrs)

The objective is to give the student an introduction to the various materials and processes used in modern industry. The structure and properties of steel, aluminum, ceramics and polymers will be explored. The methods of machining, joining, assembling and manipulating these materials will be demonstrated within class labs. Outside research will reinforce the information presented in the class.

Prerequisites:

This course is open to all students who are accepted in technical programs.

Controlling Purpose:

This course is designed to help the student increase their knowledge concerning materials and processes used in industry.

Learner Outcomes:

Upon completion of the course, the student will be able to list and describe materials and processes used to produce products in our society.

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.

UNIT 1: Industrial Materials

Outcomes: Upon completion of this unit, the student will be able to successfully list and describe materials used in industry.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						State how materials from the earth are formed into industrial materials used by industry.
						Describe the steps and equipment used in steel production.
						List and describe ten materials used in the manufacturing process.

UNIT 2: Introduction To Material Processing

Outcomes: Upon completion of this unit, the student will be able to successfully apply processing steps in a diagram form.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List and describe the three furnaces used in manufacturing steel.
						Diagram the steps necessary to process and heat treat aluminum.

UNIT 3: Casting Processes

Outcomes: Upon completion of this unit, the student will be able to successfully define the forming process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Group discontinuities from the casting process.
						List five materials that are commonly used in casting.
						List five advantages and five disadvantages of the casting process.
						Describe equipment used in the casting process.

UNIT 4: Separating And Joining Processes

Outcomes: Upon completion of this unit, the student will be able to successfully define the separating and joining processes.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List and describe flame cutting.
						List and describe five methods other than flame cutting used to separate Materials.
						List and describe ten methods of joining materials.
						Describe equipment used in the casting process.

UNIT 5: Conditioning Processes

Outcomes: Upon completion of this unit, the students will be able to successfully define the conditioning process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List and describe five conditioning processes.
						List and describe two advantages and two disadvantages of the separating process.
						Illustrate the best method for joining structural materials.

UNIT 6: Assembly Process

Outcomes: Upon completion of this unit, the student will be able to successfully define the assembly process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Illustrate the assembly process.
						List and describe problems encountered in the assembly process.
						Using case studies, implement lean processes as needed in manufacturing.

UNIT 7: Finishing Process

Outcomes: Upon completion of this unit, the student will be able to successfully define the finishing process.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List and describe problems encountered in the finishing process.
						List and describe ten methods used to provide a finish to a product.

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.