



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**RADIOGRAPHIC TESTING III
NDT3466 3 Credit Hours**

Student Level:

This course is open to students on the college level in either the freshman or sophomore year and to high school vocational students.

Catalog Description:

NDT 3466 - RADIOGRAPHIC TESTING III (3 hrs)

This course is devised to provide an in-depth study of the processes of radiography. It provides hands-on experience to prepare the student for a position in the field of radiography.

Prerequisites:

NDT3465 Radiographic Testing II or instructor approval.

Controlling Purpose:

This course is designed to impart advanced applied radiographic practical applications, techniques, so the student could perform, develop, and interpret radiographs.

Learner Outcomes:

Upon completion of this course the student will be able to:

1. Demonstrate calculations for density changes.
2. Demonstrate image quality using screens, filters, and IQI's.
3. Calculate and demonstrate choices of film, density, and sensitivity per AWS code.
4. Calculate and demonstrate choices of film, density, and sensitivity per API code.
5. Calculate and demonstrate choices of film, speed, density, per ASME code.
6. Demonstrate the ability to maintain records.
7. Demonstrate ability to interpret film images on radiographs.
8. Correctly apply all safety attitudes and procedures associated with radiographic testing.
9. Apply his or her knowledge, by performing practical applications similar to those performed by radiographer.

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

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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.
- N = No instruction or training in this area.

UNIT 1: Density Changes						
Outcomes: Upon completion of this unit, the students will be able to successfully make calculations to change density of a radiograph.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Given five radiographs, correctly predict the change of density when exposed at a new time, or MA. Setting.
						Given five radiographs, correctly predict the change of density when exposed to a film of a different speed.
						Given five radiographs, correctly predict the change of density when exposed to a film from a different manufacturer.

UNIT 2: Screens and Filters

Outcomes: Upon completion of this unit, the students will be able to successfully perform radiography, using screens filters, verifying using IQI's.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Apply knowledge of screens to produce five radiographs with reduced x-ray scatter.
						Demonstrate the use of copper filters placed near the tube port on three radiograph images.
						List and explain how application of differing kV affects the outcome of a radiograph when using lead screens.

UNIT 3: Radiographic Image Quality

Outcomes: upon completion of this unit, the students will be able to successfully produce radiographs with image quality equal to or exceeding code requirements with image quality equal to or exceeding code requirements.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Determine image quality requirements of API 1104, and produce five radiographs exceeding the requirements.
						Determine image quality requirements of ASME Section V produce five radiographs exceeding the requirement.
						Determine image quality requirements of the D1.1 code produce five radiographs exceeding the requirements.
						Given an exposure chart, make changes in distance while maintaining density.
						Given an exposure chart for steel, produce three radiographs of aluminum using correction factors.
						Double load a cassette and meet image requirements for varying thickness of material with one exposure.

UNIT 4: Film Handling, Loading And Processing

Outcomes: Upon completion of this unit, the student will be able to successfully process film manually and automatically.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Correctly maintain density check log for manual and automatic processing units.
						Correctly mix chemicals, and apply process control checks for manual processing of film.
						Correctly mix chemicals, and apply process control checks in automatic processing unit.
						Correctly maintain quality checks of the densometer, film viewers, and the viewing room.

UNIT 5: X-Ray Records

Outcomes: Upon completion of this unit, the students will be able to successfully maintain records for safety, reporting, cabinet use, and process controls.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Record and enter all film exposures in the exposure log.
						Record and enter dosimeter readings in the daily log.
						Record and enter records for TLD's.
						Record and enter all information of fifteen radiography report sheets, as required by codes.
						Record and enter all information on cabinet leakage as required by the State of Kansas.

UNIT 6: Radiographic Viewing

Outcomes: Upon completion of this unit, the students will be able to successfully interpret films as required by code.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Interpret twenty films per AWS D1.1 with 80% accuracy.
						Interpret twenty films per API 1104 with 80% accuracy.
						Interpret twenty films per ASME Section VIII with 80% accuracy.
						Complete computer film interpretation program 80% or greater accuracy.

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.