

LAST REVIEW: 2010-2011 **NEXT REVIEW:** 2015-2016 **STATUS:** A

COURSE TITLE: Imaging II

COMMON COURSE NUMBER: RTE 2457

CREDIT HOURS: 2

CONTACT HOUR BREAKDOWN

CLOCK HOURS:

Lecture: 32 Lab:

Clinic: Other:

PREREQUISITE(S): RTE 1523, RTE 1523L, RTE 1824

COREQUISITE(S):

PRE/COREQUISITE(S): RTE 2385, RTE 2457L, RTE 2533, RTE 2834

COURSE DESCRIPTION: A study of the factors that affect radiographic image quality, solving technique problems, automatic exposure control, & development of technique charts.

UNIT TITLES

1. Density/Brightness
2. Contrast/Gray Scale
3. Distortion
4. Recorded Detail/Spatial Resolution
5. Development of Technique Charts
6. Automatic Exposure Control (AEC)
7. Solving Technique Problems

EVALUATION: Assessment includes written examinations & assignments.

Common Course Number: RTE 2457

UNITS

Unit 1 Density/Brightness

General Outcome:

1.0 The student shall be able to describe the factors that affect image density/brightness.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1** Define image density/brightness.
- 1.2** Describe the process of evaluating image density/brightness.
- 1.3** Identify & analyze the factors that affect image density/brightness.
- 1.4** Assess density/brightness on radiographic images.
- 1.5** Describe how to adjust image density/brightness.

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UNITS

Unit 2 Contrast/Gray Scale

General Outcome:

2.0 The student shall be able to describe the factors that affect image contrast/gray scale.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1** Define image contrast/gray scale.
- 2.2** Describe the process of evaluating image contrast/gray scale.
- 2.3** Identify & analyze the factors that affect image contrast/gray scale.
- 2.4** Assess contrast/gray scale on radiographic images.
- 2.5** Describe how to adjust image contrast/gray scale.

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UNITS

Unit 3 Distortion

General Outcome:

3.0 The student shall be able to describe the factors that affect image distortion.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** Define image distortion & differentiate between size & shape distortion.
- 3.2** Describe the process of evaluating image distortion.
- 3.3** Identify & analyze the factors that affect image distortion.
- 3.4** Assess distortion on radiographic images.
- 3.5** Describe how to minimize image distortion.

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UNITS

Unit 4 Recorded Detail/Spatial Resolution

General Outcome:

4.0 The student shall be able to describe the factors that affect recorded detail/spatial resolution of an image.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1** Define recorded detail/spatial resolution.
- 4.2** Describe the process of evaluating recorded detail/spatial resolution.
- 4.3** Identify & analyze the factors that affect recorded detail/spatial resolution.
- 4.4** Assess recorded detail/spatial resolution on radiographic images.
- 4.5** Describe how to maximize recorded detail/spatial resolution.

Common Course Number: RTE 2457

UNITS

Unit 5 Development of Technique Charts

General Outcome:

5.0 The student shall be able to describe the process of developing technique charts.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1** Describe the purpose of radiographic technique charts.
- 5.2** Differentiate between fixed & variable kV technique charts.
- 5.3** Explain the relationship between part thickness & the accurate use of a technique chart.
- 5.4** State the steps necessary to develop a technique chart.
- 5.5** Describe anatomically programmed radiography (APR).

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UNITS

Unit 6 Automatic Exposure Control (AEC)

General Outcome:

6.0 The student shall be able to describe the use of an automatic exposure control (AEC) device to produce radiographic images.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1** Describe the purpose of an AEC device.
- 6.2** Identify the components of an AEC device.
- 6.3** Describe the functions of an AEC device.
- 6.4** Explain the process of selecting technical factors & ionization chambers for AEC.
- 6.5** Describe how to troubleshoot images produced utilizing AEC.

Common Course Number: RTE 2457

UNITS

Unit 7 Solving technique Problems

General Outcome:

7.0 The student shall be able to solve technique problems related to formation of the radiographic image utilizing rules, laws, & mathematical formulas.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 7.1** Describe the mAs reciprocity law & calculate mA or exposure time to maintain image density/brightness.
- 7.2** Calculate the minimum % change needed in mAs to visibly change image density/brightness.
- 7.3** Employ the general rule of thumb for adjusting mAs to change image density/brightness.
- 7.4** Utilize the 15% rule to maintain or adjust image density/brightness & contrast/gray scale.
- 7.5** Utilize the tube angle/SID rule to calculate appropriate SID.
- 7.6** Describe the mAs/distance relationship & solve problems utilizing the Direct Square Law/Exposure Maintenance Formula.
- 7.7** Utilize the Relative Speed Conversion Formula to adjust mAs for changes in IR speed.
- 7.8** Utilize the Grid Conversion Formula to adjust mAs for changes in grid ratio.
- 7.9** Calculate the minimum % change needed in kV to visibly change image contrast/gray scale.
- 7.10** Determine image density/brightness, contrast/gray scale, distortion, & recorded detail/spatial resolution when given a set of technical factors.