

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

**COURSE TITLE:** Imaging II Lab

**COMMON COURSE NUMBER:** RTE 2457L

**CREDIT HOURS:** 1

**CONTACT HOUR BREAKDOWN**

**CLOCK HOURS:**

Lecture:                      Lab: 32

Clinic:                        Other:

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

**COREQUISITE(S):**

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

**COURSE DESCRIPTION:** Practical application of theory taught in RTE 2457 class. Students perform laboratory experiments to demonstrate factors affecting radiographic quality.

**UNIT TITLES**

1. Radiographic Detail (Definition)
2. Radiographic Distortion
3. Radiographic Density
4. Radiographic Contrast
5. Radiographic Exposure Calculations
6. Radiographic Technique Formulation

**EVALUATION:** Assessment includes laboratory experiments & group activities.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 1 Radiographic Detail (Definition)**

**General Outcome:**

**1.0 The student shall be able to accurately describe and demonstrate the technical changes which impact radiographic detail.**

**Specific Measurable Learning Outcomes:**

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

- 1.1** Demonstrate the impact of SID changes on detail.
- 1.2** Demonstrate the impact of OID changes on detail.
- 1.3** Demonstrate the impact of FSS changes on detail.
- 1.4** Demonstrate the impact of Image receptor speed on detail.
- 1.5** Demonstrate the impact of Film Type/Speed on detail.
- 1.6** Demonstrate the impact of object motion on detail
- 1.7** Evaluate radiographic images and make appropriate changes in technical factors to improve detail.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 2 Radiographic Distortion**

**General Outcome:**

**2.0 The student shall be able to accurately describe and demonstrate factors impacting the production of radiographic distortion.**

**Specific Measurable Learning Outcomes:**

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

- 2.1** Demonstrate the impact of SID on distortion.
- 2.2** Demonstrate the impact of OID on distortion.
- 2.3** Demonstrate impact of Image Receptor Speed on distortion.
- 2.4** Demonstrate the impact of Tube-Part-Film Alignment on distortion.
- 2.5** Demonstrate the impact of FSS on distortion.
- 2.6** Demonstrate the impact of object motion on distortion.
- 2.7** Establish criteria for minimizing distortion by altering technical factors.
- 2.8** Evaluate radiographic images and make appropriate changes in technical factors to reduce radiographic image distortion.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 3 Radiographic Density**

**General Outcome:**

**3.0 The student shall be able to accurately describe and demonstrate the impact of various technical factors on radiographic density/brightness.**

**Specific Measurable Learning Outcomes:**

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

- 3.1** Demonstrate the impact of mAs changes on density/brightness.
- 3.2** Demonstrate the impact of kVp changes on density/brightness.
- 3.3** Demonstrate the impact of SID changes on density/brightness.
- 3.4** Demonstrate the impact of OID changes on density/brightness.
- 3.5** Demonstrate the impact of Image Receptor Speed on density/brightness.
- 3.6** Demonstrate the impact of Grids on density/brightness.
- 3.7** Demonstrate the impact of Beam Limiting Device on density/brightness.
- 3.8** Demonstrate the impact of Processing conditions on density/brightness.
- 3.9** Demonstrate the impact of Beam Filtration on density/brightness.
- 3.10** Demonstrate the impact of Heel Effect on density/brightness.
- 3.11** Establish criteria for optimizing density/brightness by altering technical factors.
- 3.12** Evaluate radiographs and make appropriate changes in technical factors to optimize radiographic density/brightness.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 4 Radiographic Contrast**

**General Outcome:**

**4.0 The student shall be able to accurately describe and demonstrate the impact of technical changes on radiographic contrast.**

**Specific Measurable Learning Outcomes:**

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

- 4.1** Demonstrate the impact of kVp changes on contrast.
- 4.2** Demonstrate the impact of Image Receptor Speed on contrast.
- 4.3** Demonstrate the impact of Beam Limitation on contrast.
- 4.4** Demonstrate the impact of mAs on contrast.
- 4.5** Demonstrate the impact of Grid Devices on contrast.
- 4.6** Demonstrate the impact of Beam Filtration on contrast.
- 4.7** Demonstrate the impact of SID & OID on contrast.
- 4.8** Demonstrate the impact of Processing conditions on contrast.
- 4.9** Establish criteria for optimizing contrast by altering technical factors.
- 4.10** Evaluate radiographs and make appropriate changes in technical factors to optimize radiographic contrast.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 5 Radiographic Exposure Calculation**

**General Outcome:**

**5.0 The student shall be able to accurately describe and demonstrate exposure calculation results as they relate to radiographic quality.**

**Specific Measurable Learning Outcomes:**

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

- 5.1** Calculate and demonstrate photographic effect.
- 5.2** Calculate and measure penumbra.
- 5.3** Calculate and measure magnification and % magnification.
- 5.4** Apply the mAs reciprocity law to laboratory situations.
- 5.5** Apply the 15% rule to laboratory situations.
- 5.6** Apply the Grid conversion rules to laboratory situations.
- 5.7** Apply the Screen Speed conversions to laboratory situations.
- 5.8** Demonstrate the imaging effect of altering the LUT settings for any digital exam.
- 5.9** Appropriately correct digital image exposure index (S-Number, EI number or Exposure number) by manipulating equipment settings.

**Common Course Number: RTE 2457L**

**UNITS**

**Unit 6 Radiographic Technique Formulation**

**General Outcome:**

**6.0 The student shall be able to accurately develop and demonstrate the use of fixed and variable kVp technique charts.**

**Specific Measurable Learning Outcomes:**

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

- 6.1** Develop an optimum kVp/variable mAs technique chart.
- 6.2** Develop a variable kVp/fixed mAs technique chart.