

APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of LCC Date 8-27-03

Department/Division offering course RAD/NSHT

ORIGINAL

2. Changes proposed:

(a) Present prefix and number RAD 210 Proposed prefix and number no change

(b) Present Title Radiography V

New Title no change

(c) If course title is changed and exceeds 24 characters (including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts:

no change

(d) Present credits: 9 Proposed credits: no change

(e) Current lecture: laboratory ratio 1:5 cl 1:2 lab Proposed: no change

(f) Effective Date of Change: (Semester & Year) Spring 2004

3. To be Cross-listed as n/a _____
(Prefix and Number) (Signature: Dept. Chair)

4. Proposed change in Bulletin description:

(a) Present description (including prerequisite(s):

Theories and principles involved in the production, control, and application of ionizing radiation in radiography are covered. Emphasis will be on developing a quality assurance program, quality control testing of radiographic equipment, processing the latent image, and image intensification. Lecture: 4 hours. Laboratory: 2 hours. Clinic: 20 hours.

(b) New description:

Theories and principles involved in the production, control, and application of ionizing radiation in radiography are covered. Additional topics include: developing a quality assurance program, quality control testing of radiographic equipment, processing the latent image, and image intensification. Advanced patient care skills are also included. Lecture: 4 hours. Laboratory: 2 hours. Clinic: 20 hours.

(c) Prerequisite(s) for course as changed:
no change

5. What has prompted this proposal?

Basic patient care is introduced in RAD 100. After completion of RAD 100, 110, 200, and 205, the student has more knowledge of the imaging process. Advanced issues related to patient care are presented and the student can now apply critical thinking to the process of patient care as it relates to medical imaging. Additional changes to the objectives and outline were made to better reflect the course description and actual course content.

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:

Current COURSE COMPETENCIES:

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

1. Discuss the process by which radiation is produced in the x-ray tube,
2. Discuss the elements of the x-ray circuit to include the difference between single and three phase power and high frequency generators,
3. Describe the various forms of rectification,
4. Discuss how a quality assurance program is established,
5. Identify and discuss the quality control tests that are performed to insure that diagnostic radiographic equipment meets Federal and State standards,
6. Evaluate radiographic systems to assure consistency in the production of quality images,
7. Describe and discuss the elements of automatic processing,
8. Discuss the theories and principles involved in image intensification,
9. Perform quality control tests on radiographic equipment,
10. Demonstrate progression in the performance of clinical skills.

PROPOSED COURSE COMPETENCIES:

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

1. Identify and describe the components of the x-ray imaging system,
2. Describe the function of the external and internal components of the x-ray tube,
3. Describe x-ray tube failures,
4. Interpret x-ray tube rating charts,
5. Identify and describe the factors affecting quality and quantity and the effect on the x-ray emission,
6. Identify and describe x-ray interactions with matter,
7. Discuss how a quality assurance program is established,
8. Identify and discuss the quality control tests that are performed to insure that diagnostic radiographic equipment meets Federal and State standards,
9. Evaluate radiographic systems to assure consistency in the production of quality images,
10. Describe and discuss the elements of automatic processing,
11. Discuss the theories and principles involved in image intensification,
12. Perform quality control tests on radiographic equipment,
13. Demonstrate progression in the performance of clinical skills,
14. Identify variations in patient care based on patient-specific criteria and develop an action plan to facilitate radiographic imaging,
15. Identify medical emergencies and develop criteria for radiographic imaging,
16. Identify patient tubes and lines, list basic precautions for each and identify on a radiograph.

7. What other departments could be affected by the proposed change?
n/a

8. Will changing this course change the degree requirements in one or more programs?

No Yes (If yes, attach an explanation of the change.)*

9. Is this course currently included in the University Studies Program? No Yes (If yes, please attach correspondence indicating concurrence of the University Studies Committee.)

10. If the course is a 100-200 level course, please submit evidence (e.g. correspondence) that the Community College System has been consulted.
email attached
11. Is this a minor change? No Yes (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)
12. Within the Department, who should be consulted for further information on the proposed course change?

Name: Sarajane Doty and Pat Massey Phone Extension: 4100

Signatures of Approval:

Department Chair: Gregory A. Zell Date: 10-17-03
Dean of the College: [Signature] Date: 11-20-03

Date of Notice to the Faculty: _____

*Undergraduate Council: _____

*University Studies: _____

*Academic Council for the Med. Ctr: _____ Date: _____

*Senate Council: _____ Date: _____

ACTION OTHER THAN APPROVAL: _____

APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR
Additional Information on CCS Forms

1. Course Outline: (Two-level outline required)

CURRENT COURSE OUTLINE:

- I. Components of basic radiographic units
 - A. Console
 - B. X-ray Tube
 - C. Automatic Exposure Control
 - D. Manual Exposure Control
 - E. Beam Restriction
 - F. X-ray Tube Rating Charts
 - G. Methods of Tube Cooling

- II. X-ray generation, transformers and rectification systems
 - A. Basic Principles
 - B. Phase Pulse Frequencies

- III. Fluoroscopic unit
 - A. Image Intensifier
 - B. Viewing/Recording System
 - C. Automatic Brightness Control
 - D. Radiation Safety Requirements

- IV. Image processing
 - A. Automatic Processing
 - B. Processor Artifacts
 - C. Processing Digital/Electronic Images

- V. Quality assurance
 - A. Introduction to Quality Assurance
 - B. State and Federal Regulations

PROPOSED COURSE OUTLINE:

- I. Imaging System
 - A. Operating Console
 - B. High-Voltage Generator
 - C. Single-Phase Power
 - D. Three-Phase Power
 - E. High-Frequency Generator
 - F. Voltage Ripple
 - G. Power Rating
 - H. X-Ray Circuit

- II. X-Ray Tube
 - A. External Components
 - B. Internal Components
 - C. X-Ray Tube Failure
 - D. Rating Charts

- III. X-Ray Production
 - A. Electron Target Interaction
 - B. X-Ray Emission Spectrum

C. Factors Affecting the X-Ray Emission Spectrum

IV. X-Ray Emission

- A. X-Ray Quality
- B. X-Ray Quantity

V. X-Ray Interaction with Matter

- A. Coherent Scattering
- B. Compton Effect
- C. Photoelectric Effect
- D. Pair Production
- E. Photodisintegration
- F. Differential Absorption
- G. Contrast Examinations
- H. Exponential Attenuation

VI. Fluoroscopy

- A. Image Intensifier
- B. Viewing/Recording System
- C. Automatic Brightness Control
- D. Radiation Safety Requirements

VII. Image processing

- A. Automatic Processing
- B. Processor Artifacts
- C. Processing Digital/Electronic Images

VIII. Quality assurance

- A. Introduction to Quality Assurance
- B. State and Federal Regulations

IX. Age Specific Patients

- A. Infant
- B. Child
- C. Adolescent
- D. Adult
- E. Geriatric

X. Trauma/Combative Patient

- A. Patient Care
- B. Imaging

XI. Medical Emergencies

- A. Signs and Symptoms
- B. Imaging

XII. Patient Tubes and Lines

- A. Drainage
- B. Vascular
- C. Gastrointestinal

2. List of Experiments/Activities: (If laboratory or clinic is involved)

Laboratory Setting:

- Reject/Repeat Analysis
- Processor Quality Control

Beam Restriction
Equipment Calibration
Screens/Cassettes
Radiographic Patient Care Plans

Clinic: no change

3. Changes in Suggested Learning Resources:
no change
4. Impact of Change on Enrollment:
n/a
5. For Inclusion on LCC General Education List:
 - A. Degree Area (AA/AS or AAS or both)
n/a
 - B. Competency Area
n/a
 - C. General Education Competency Statement (List and provide examples of implementation methods/activities)
n/a
 - D. Across the Curriculum Competencies (List and provide examples of implementation methods/activities)
n/a
6. For Removal from General Education List:
 - A. Competency Area
n/a
 - B. Rationale
n/a
7. For Inclusion on University Studies List: (A syllabus must be attached.)
 - A. Area
n/a
 - B. Course Competencies
n/a
 - C. Description of Writing Component
n/a

If a course has not been revised during the last five (5) years, the major change route must be used.
n/a