New Course Request

Check Appropriate Boxes: Undergraduate credit [✓] Graduate credit [☐] Professional credit [☐]

1. School/Division: College of Health and Human Services

2. Academic Subject Code: ________________________________

3. Course Number: RADX-R271 (must be cleared with University Enrollment Services) 4. Instructor: Duncan

5. Course Title: Foundations of Image Acquisition

Recommended Abbreviation (Optional) Image Acquisition (Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2011

7. Credit Hours: Fixed at [3] or Variable from ________ to ________

8. Is this course to be graded S-F (only)? Yes [ ] No [X]

9. Is variable title approval being requested? Yes [ ] No [X]

10. Course description (not to exceed 50 words) for Bulletin publication: Foundation of image acquisition introduces the principles of radiographic image production, image capturing devices and image characteristics and quality.

11. Lecture Contact Hours: Fixed at [3] or Variable from ________ to ________

12. Non-Lecture Contact Hours: Fixed at ________ or Variable from ________ to ________

13. Estimated enrollment: [20] of which [0] percent are expected to be graduate students.

14. Frequency of scheduling: ________ Will this course be required for majors? Yes [ ]

15. Justification for new course: changing curriculum to meet academic and professional requirements

16. Are the necessary reading materials currently available in the appropriate library? Yes [ ]

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: [Signature]

Date: 2/11/11

Department Chairman/Division Director

Dean

Date

Chancellor/Vice-President

Date

University Enrollment Services

Date

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.
COURSE DESCRIPTION:
Foundations of Image Acquisition introduces the principles of radiographic image production, image capturing devices, and image characteristics and quality.

INSTRUCTOR:
Cheryl Duncan, M.S., R.T.(R)(QM)
duncanc@ipfw.edu
Office Phone: IPFW 481-6146
Campus Office: Neff B50C
Office Hours: By appointment

CLASS DAYS AND TIMES:

COURSE GOAL:
In this course, students will investigate and begin to apply concepts related to x-ray production, photon interaction with matter and image formation and processing.

LEARNING OBJECTIVES:
Upon completion of this course, with 80% minimum standards, the student will be able to:

1. Identify the basic components and functions of a radiographic tube.
2. Explain how x-rays are produced and interact with matter.
3. Describe the composition of film and intensifying screens and each of these components' functions.
4. Discuss the formation of a latent and manifest image.
5. Explain the systems of automatic processing and the functions of the chemicals involved.
6. Describe the importance of grids, beam restricting devices, filters, and shielding and how they affect radiation exposure.
7. Describe the components of various digital imaging systems and the basic function of each component.
8. Discuss the influence of ma, time, kv, OID and SID on the radiographic image.
9. Given the appropriate data and utilizing basic mathematical functions, solve problems relating to:
   a. Inverse Square Law
   b. Reciprocity Law
   c. Grid Conversion
   d. H and D Curves
10. Determine the probable cause of automatic processing problems.
11. Determine the basic exposure factors to obtain diagnostic quality radiographs with minimum radiation exposure.
12. Adapt exposure factors for various accessories to maintain appropriate radiographic quality.
13. Identify radiation protection procedures for the patient, self and others.
14. Evaluate radiographic images for appropriate image quality.
15. Identify the safe limits of equipment operation.
REQUIRED TEXT:

COURSE FORMAT:
The information for this course is presented using a variety of teaching strategies including:
1. Lectures
2. Group Discussions
3. Individual and Group Activities
4. E-Learning/Blackboard
5. Labs
Objectives for each unit and outlines of each chapter are available on Blackboard. Students tend to be most successful in this course when they have reviewed the outline and read the chapter prior to class discussion of the material.

METHOD OF EVALUATION:

1. Grading Scale:
   
   A+  99-100  B+  92-93  C+  85-86
   A   95-98   B   88-91   C   81-84
   A-  94      B-  87      C-  80

2. The grade for Foundations of Image Acquisition will be calculated as follows:
   50% based on Unit Opportunities
   25% based on Comprehensive Final Opportunity
   15% based on Unit Assignments
   10% based on Principles I Notebook
# Tentative Course Schedule

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