Code # NHP18 (2014) REV

**New/Special Course Proposal-Bulletin Change Transmittal Form**

**Undergraduate Curriculum Council** - Print 1 copy for signatures and save 1 electronic copy.

**Graduate Council** - Print 1 copy for signatures and send 1 electronic copy to [mmcginnis@astate.edu](mailto:mmcginnis@astate.edu)

|  |
| --- |
| **New Course or**  **Special Course (Check one box)**  *Please complete the following and attach a copy of the catalogue page(s) showing what changes are necessary.* |

|  |  |
| --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

1. Proposed Course Prefix and Number (For variable credit courses, indicate variable range.)

RAD 3213

2. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Image Acquisition and Evaluation

Short Title: Image ACQ and EVAL

3. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio problems, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

4. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental)?

Standard letter

5. Is this course dual listed (undergraduate/graduate)?

No

6. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.)

No

7. Brief course description (40 words or fewer) as it should appear in the bulletin.

Image acquisition for digital and screen-film image receptors, the Image quality evaluation process, image quality factors, and image quality analysis. Emphasis on application of skills and suggested corrective actions.

8. Indicate all prerequisites and if this course is restricted to a specific major, which major. (If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites?

Formal admittance into the Radiologic Science Program

b. Why?

The Medical Imaging and Radiations Sciences programs are lock step programs. Students complete the program in cohorts.

9. Course frequency(e.g. Fall, Spring, Summer). Not applicable to Graduate courses.

Fall

10. Contact Person (Name, Email Address, Phone Number)

Ray Winters

[rwinters@astate.edu](mailto:rwinters@astate.edu)

ext. 3329

11. Proposed Starting Term/Year

Fall 2015

12. Is this course in support of a new program? No

If yes, what program?

Enter text...

13. Does this course replace a course being deleted? Yes

If yes, what course?

RT 2122

Has this course number been used in the past? No

*Submit Course Deletion Proposal-Bulletin Change Transmittal Form.*

14. Does this course affect another program? No

If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Enter text...

15. Justification should include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

The medical imaging professional must be able to understand the image acquisition process for every type of image receptor. The process of image evaluation for quality is an integral part of the daily duties of a medical imaging professional. Additionally, causes and corrective actions for sub-optimal images must also be understood and practiced.

Course Goals:

1. Discuss various photon interactions with matter by describing the interaction, relation to atomic number, photon energy and part density, and their applications in diagnostic radiology.
2. Discuss the clinical significance of the photoelectric and scattering interactions in diagnostic imaging.
3. Discuss practical considerations in setting standards for acceptable image quality.
4. Assess radiographic exposure on radiographic images.
5. Analyze the relationships of factors that control and affect image exposure.
6. Describe an effective image analysis method.
7. Apply a problem-solving process used for image analysis.
8. Critique images for appropriate technical, procedural and pathologic factors.
9. Categorize cause of sub-optimal images.
10. Explain corrective actions for sub-optimal images.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

This course is mandated by the current American Society of Radiologic Technologists Radiography Educational Curriculum stipulated by the Joint Review Committee on Education in Radiologic Technology. It is a foundational course which leads to preparing students for entry level practice of radiologic technology.

c. Student population served.

Students formally admitted to the Bachelor of Science in Radiologic Sciences program

d. Rationale for the level of the course (lower, upper, or graduate).

Students are required to be admitted to the Radiologic Science Program before taking this class. Students must have completed all core classes of approximately 75 hours with a minimum of 2.5 GPA. The 3000-level is appropriate for the foundation of this professional track, leading to the 4000-level mastery courses. It will require higher level us of critical thinking synthesis for problem solving.

16. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week1: Image evaluation processes

Week 2: Image quality standards and characteristics

Week 3: Interactions of x-ray photons with matter

Week 4: Relationship of exposure factors and image quality

Week 5 Review and assessment:

Week 6: Digital image acquisition

Week 7: Digital image quality factors

Week 8: Analysis of digital image quality

Week 9: Corrective actions for sub-optimal digital images

Week 10: Review and assessment

Week 11: Screen-film image acquisition

Week 12: Screen-film image quality factors

Week 13: Analysis of screen-film images

Week 14: Corrective actions for sub-optimal screen-film images

Week 15: Comprehensive review and comprehensive assessment

17. Course requirements (e.g. research papers, projects, interviews, tests, etc.)

Pre-lecture preparation assignments, three formative exams, one comprehensive exam.

18. Special features (e.g. labs, exhibits, site visitations, etc.)

This will be a web-enhanced class. There will be supplemental internet research and activities, as well as required pre-class videos and assignments. An additional lab-based course will reinforce concepts the didactic content of this course..

19. Department staffing and classroom/lab resources (Will this require additional faculty, supplies, etc.?)

No additional resources will be required.

20. What is the primary intended learning goal for students enrolled in this course?

The successful student will develop a working knowledge of the image acquisition process and a systematic image evaluation process.

21. Reading and writing requirements:

a. Name of book, author, edition, company and year

Radiologic Sciences for Technologists by Stuart Bushong, 10th edition, Elsevier, 2013 and Radiographic Imaging and Exposure by Terri Fauber, 4th edition, Elsevier, 2013.

b. Number of pages of reading required per week: 30

c. Number of pages of writing required over the course of the semester: 2

22. High-Impact Activities (Check all that apply)

Collaborative assignments

Research with a faculty member

Diversity/Global learning experience

Service learning or community learning

Study abroad

Internship

Capstone or senior culminating experience

Other Explain: Internet-based image analysis practice

23. Considering the indicated primary goal (in Box #20), provide up to three outcomes that you expect of students after completion of this course.

**Outcome #1:** (For example, what will students who meet this goal know or be able to do as a result of this course?)

The student will be able to explain the image acquisition process for each type of image receptor used in medical imaging.

Learning Activity:(For example, what instructional processes do you plan to use to help students reach this outcome?)

Directed reading assignments and lectures. Web-based instructional supplements will be used to demonstrate the image acquisition process and will be assigned for students to review outside of class.

Assessment Tool: (For example, what will students demonstrate, represent, or produce to provide evidence of their learning?)

Students will cite the image acquisition process for each type of image receptor used in medical images by answering multiple-choice questions on written exams with 80% accuracy.

*(Repeat if needed for additional outcomes 2 and 3)*

**Outcome #2:**

Students will develop systematic image evaluation skills.

Learning Activity:

Internet-based image evaluation practices and lectures

Assessment Tool:

Students will demonstrate image evaluation skills by answering multiple-choice questions on written exams and by completing the interent-based image analysis practices with 80% accuracy.

**Outcome #3**:

Students will be able to explain the interactions of x-rays with human tissues.

Learning Activity:

Directed course readings and lecture.

Assessment Tool:

Assessment of the student’s understanding of the interactions of x-rays with human tissues will primarily occur through answering multiple-choice questions on written exams with 80% accuracy.

24. Please indicate the extent to which this course addresses university-level student learning outcomes:

* 1. Global Awareness

Minimally  
Indirectly  
Directly

* 1. Thinking Critically

Minimally  
Indirectly  
Directly

* 1. Using Technology

Minimally  
Indirectly  
Directly

**From the most current electronic version of the bulletin, copy all bulletin pages that this proposal affects and paste it to the end of this proposal.**

**To copy from the bulletin:**

1. Minimize this form.
2. Go to <http://registrar.astate.edu/bulletin.htm> and choose either undergraduate or graduate.
3. This will take you to a list of the bulletins by year, please open the most current bulletin.
4. Find the page(s) you wish to copy, click on the “select” button and highlight the pages you want to copy.
5. Right-click on the highlighted area.
6. Click on “copy”.
7. Minimize the bulletin and maximize this page.
8. Right-click immediately below this area and choose “paste”.
9. For additions to the bulletin, please change font color and make the font size larger than the surrounding text. Make it noticeable.
10. For deletions, strike through the text, change the font color, and enlarge the font size. Make it noticeable.

This is a complete program overhaul. Please refer to the accompanying Program package. This information will replace information on pages 311-332 and 504-512 in the bulletin