# New Course Request

**Indiana University**

### Indianapolis Campus

**Check Appropriate Boxes:**
- Undergraduate credit [✓]
- Graduate credit [ ]
- Professional credit [ ]

1. **School/Division**: Radiologic Sciences/School of Medicine
2. **Academic Subject Code**: RADI

3. **Course Number**: RADI-R428 (must be cleared with University Enrollment Services)
4. **Instructor**: Golali Nazipour

5. **Course Title**: Medical Imaging Technology Physics Review

   **Recommended Abbreviation (Optional)**: (Limited to 32 Characters including spaces)

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

7. **Credit Hours**: Fixed at 1 or Variable from ________ to ________

8. **Is this course to be graded S-F (only)**: Yes [✓] No [ ]

9. **Is variable title approval being requested**: Yes [ ] No [✓]

10. **Course description (not to exceed 50 words) for Bulletin publication**:
    - Review of the physical principles of radiation production and image formation for the Medical Imaging professional.

11. **Lecture Contact Hours**: Fixed at 1 or Variable from ________ to ________

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

13. **Estimated enrollment**: 8 of which 0 percent are expected to be graduate students.

14. **Frequency of scheduling**: Once per year

15. **Will this course be required for majors?**: Yes

16. **Justification for new course**: The course is currently under the R428 variable title topics course. New course number is to help alleviate confusion.

17. **Are the necessary reading materials currently available in the appropriate library?**: Yes

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

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

   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:

**Department Chairman/Division Director**

[Signature]  
Date: 11/19/09

**Dean of Graduate School (when required)**

[Signature]  
Date: ________

### Approved by:

**Dean**

[Signature]  
Date: 12/10/09

**Chancellor/Vice-President**

[Signature]  
Date: ________

**University Enrollment Services**

[Signature]  
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.

**UPS 724**
University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White
Medical Imaging Technology
Medical Center/Radiology
Indiana University Purdue University
Indianapolis

IN RADI R428 MIT PHYSICS REVIEW

For Intervention Radiology Student
Spring Semester 2009

Lecturer: Al Naziripour, Ph.D Adjunct Lecturer

Lecture: Friday, 8:00-9:15
9:30 to 10:50 am,

email: gonaziri@iupui.edu

Phone: (317) 274-5090

Office: hours: My "official" office hours - Radiology-Room 118
Tuesday and Thursday afternoon 11:30 to 12:30 AM

"unofficial" office hours: almost any time during the week I am here, some Saturdays and Sundays.

Feel free to schedule a time to meet if none of these times fit you - my time is your time!

Please read the entire syllabus carefully; you are responsible for all of the requirements and procedures described here. You are also responsible for all announcements, assignments, changes, etc., whether or not you are in class.
Objective:
Intervention Radiography Review designed for the junior or the senior Advanced Medical Imaging student. This course will provide an exciting opportunity for the participant to become better acquainted with the physics of Imaging Technology and its practical application to Radiology. This course was designed with the content outline provide by the American Registry of Diagnostic Medical Radiography in Physics. Participants will integrate course material with practical aspects of radiography in their clinical experiences. At the conclusion of this course the Radiology student will be better prepared to enter advanced level course work and also be better prepared for clinical rotations.

COURSE GOALS
Upon completion of Intervention Radiography Review, the students will be familiar with
1. Comparative studies of diagnostic imaging technology including Fluoroscopy, CT, Ultrasound sonography, PET and nuclear medicine Transparency of Human Body to Human Radiation, x-ray-the basic Radiological Tool.

2. Theory and the fundamental principle of x-ray production

3. X-ray tube and the principle of x-ray production. Screen film radiography

4. Principle of Fluoroscopy and computer Tomography

5. Digital Radiography.

6. Computer Network s PACKS and Technology

7. Computer in Medical Imaging

8. Biological Safety.

9. Indiana safety standard
Class Etiquette:
The lecture period is a time for learning. Inappropriate talking, eating, or working on other coursework during the class session is not acceptable. If the instructor notices behavior that is not conducive to the proper functioning of the class, the involved student(s) will be asked to leave. Cell phones must be turned off. Personal pagers must be on vibrate, not audible. Use of laptops with wireless internet connection should be restricted to notetaking or searching for course-related information. Inappropriate use of laptops will result in loss of privilege during class session.

LEARNING RESOURCES
REQUIRED READING MATERIALS:
Principles of Radiographic Imaging
By Richard Carlton and Arlene M. Adler

SUGGESTED RESOURCES
Hendee, W. R., Ritnour, E. Russell, "Medical Imaging physics"
Review all lectures notes that are stored on Oncourse

Additional handouts from the instructor


ASSESSMENT AND EVALUATION
Each participant is expected to attend all lectures that are provided and to participate in the demonstrations that are provided.

Each participant is expected to inform the instructor about any accommodations that need to be made in order to fulfill course requirements.

Each participant is expected to inform the instructor about any accommodations that need to be made in regards to testing.

Final Grades will be based on the following percentages:
Homework 40%
Class Participation 10%
Comprehensive Final Exam 50%
Total 100%

Grading Scale - letter grades will be awarded on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94 and above</td>
</tr>
<tr>
<td>A-</td>
<td>93-91</td>
</tr>
<tr>
<td>B+</td>
<td>90-88</td>
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<tr>
<td>B</td>
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<tr>
<td>D-</td>
<td>63-60</td>
</tr>
<tr>
<td>F</td>
<td>59-</td>
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</tbody>
</table>
Tentative Schedule

I. Elementary Principles:
Principles of waves, longitudinal and transverse wave, Frequency range and their name,
Units and parameters of waves, changes of propagation speed with frequency,
dependence of propagation speed with media, positive and negative decibel changes

II. X-Ray Instrumentation:

III. Image Production:
Imaging.

IV. Evaluation
Operation

V. Review & Examination
<table>
<thead>
<tr>
<th>Week/date</th>
<th>Lesson</th>
<th>Topics</th>
<th>Section to read</th>
<th>Assignment</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week1 Feb20</td>
<td>Lesson 1</td>
<td>MRI Ultrasound Standard Conversion Relationship</td>
<td>45 38 Hand out</td>
<td>No assignment due</td>
<td>HW1 will be assigned</td>
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<tr>
<td>Week2 Feb27</td>
<td>Lesson 2</td>
<td>Ultrasound X-ray Theory, Tube and production</td>
<td>Chapter 6, 7</td>
<td>Homework 1 from lesson 1 is due</td>
<td>HW2 From lesson 1</td>
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<tr>
<td>Week3 March6</td>
<td>Lesson 3</td>
<td>X-ray Interaction with mater X-ray tube,</td>
<td>Chapter 6 and 7, 8, 12 Hand out</td>
<td>Homework 2 from lesson 2 is due</td>
<td>HW3 From lesson 2</td>
</tr>
<tr>
<td>Week4 March 13</td>
<td>Lesson 4</td>
<td>Fluoroscopy &amp; Contrast</td>
<td>Chapter 29 &amp; 40</td>
<td>Homework 3 From lesson 2</td>
<td>HW3 From lesson 3</td>
</tr>
<tr>
<td>Week5 March 28</td>
<td>Lesson 5</td>
<td>Computer Tomography</td>
<td>Chapters 41 &amp; 44</td>
<td></td>
<td>Comprehensive Final exam Review</td>
</tr>
</tbody>
</table>

A comprehensive final exam will be arranged for April 3

Change of Program
The above syllabus is tentative and subjected to change as appropriate