

### Request for Undergraduate Course Addition

Prepare one paper copy with all signatures and forward to the University Curriculum Committee Chair. Additionally, immediately following attainment of the College Curriculum Chair signature, send one identical ELECTRONIC COPY sans signatures in PDF format with all supporting documentation converted to PDF format by email to the University Curriculum Committee chair for electronic distribution.

College: COHP Department/Division: Medical Imaging Alpha Designator / Number : MI 209 Graded:  CR/NC:

Contact Person: Dr. Shelia Kyle, Vice President Phone: 304-526-1412  
St. Mary's Center for Education

Dr. Rita Fisher 304-526-1259  
Director – School of Medical Imaging

**NEW COURSE DATA:**

New Course Title: Introduction to Imaging Equipment

Alpha Designation/Number: 

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Title Abbreviation: 

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(Limit of 25 characters and spaces.)

Course Description (Limit of 30 words): Content is designed to provide in radiographic, fluoroscopic, mobile and tomographic equipment requirements and design.

Co-requisite(s): MI 207, MI 208, MI 209, MI 210, MI 211 First Term to be offered: Spring 10

Prerequisite(s): MTH 121 or higher, PHY 101, PHY 101L; Admission to the Medical Imaging Program Credit Hours: 3

Course(s) being deleted in place of this addition (must submit course deletion form): None

**CHECKLIST/REQUIREMENTS:**

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
  - a. COURSE OBJECTIVES
  - b. COURSE OUTLINE
  - c. SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE
  - d. INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc...)
  - e. EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc...)
3. If this course will replace a course that is required by another department, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
4. If this course will be similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
5. Send a copy of this completed form to the Marshall University Catalog Editor.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head _____	Date: _____
Registrar: _____	Date: _____
Librarian: _____	Date: _____
College Dean: _____	Date: _____
College Curriculum Chair _____	Date: _____
University Curriculum Committee Chair: _____	Date: _____
Faculty Senate Chair: _____	Date: _____
VP Academic Affairs/VP Health Services: _____	Date: _____

**Request for Undergraduate Course Addition - Page 2**  
**Additional Information Required for Undergraduate Course Addition**

College: COHP

Department/Division: Medical Imaging

Alpha Designator/Number: MI 209

Provide complete information regarding the new course addition for each topic listed below. Before routing this form, a complete syllabus also must be attached addressing the items listed on the first page of this form.

1. Identify by name the faculty in your department/division who may teach this course.

Rita Fisher, PhD RT (R)(CT)(CV)(ASRT)

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

No additional funding required

3. If this course will be required by a department/division other than your own, identify by name.

N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

No additional agreements will be needed for this class

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

No additional Library Resources to be provided by Marshall University

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

Computer, LCD Projector, Projector Screen, White Board, Markers, Handouts, CD Rom's

No additional equipment or supplies will need to be provided by Marshall University

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

None

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

See attached sheet

**BIBLIOGRAPHY:**

Adler A, Carlton R, Poelhuis DJ, Kowalczyk NK. *Workbook W/Lab Exercises for Principles of Radiographic Imaging*. 4th ed. Albany, NY: Delmar Thomson Learning; 2006.  
ISBN 140187195X

Bushong S. *Mosby's Radiography Online: Radiologic Physics*. 8th ed. St. Louis, Mo: Mosby; 2004.  
ISBN-10: 0323032591  
ISBN-13: 978-0323032599

Bushong S. *Radiologic Science for Technologists: Physics, Biology, and Protection*. 8th ed. St. Louis, Mo: Mosby; 2001.  
ISBN 0323013376

Bushong S. *Radiologic Science for Technologists - Workbook and Laboratory Manual*. 8th ed. St. Louis, Mo: Mosby; 2004.  
ISBN 0323025552

Carlton R, Adler A. *Principles of Radiographic Imaging: An Art and a Science*. 4th ed. Albany, NY: Delmar Publishers; 2006.  
ISBN 1401871941

Frey GD, Sprawls P, eds. *The Expanding Role of Medical Physics in Diagnostic Imaging*. College Park, Md: AAPM Medical Physics Publishing; 1997.  
ISBN 1888340096

Huda W, Slone RM. *Review of Radiologic Physics*. Philadelphia, Pa: Lippincott Williams & Wilkins; 1995.  
ISBN 0683042300

Parelli RJ. *Principles of Fluoroscopic Image Intensification and Television Systems Workbook and Laboratory Manual*. Boca Raton, Fla: CRC Press; 1996.  
ISBN 1574440829

## COURSE SYLLABUS OUTLINE

Course: MI 209 Introduction to Imaging Equipment

Semester and Year: Spring 2010

The textbook used will be *Principles of Radiographic Imaging*, 4<sup>th</sup> Edition, by Richard R. Carlton/Arlene M. Adler. All test material will be from the textbook, materials presented in class, instructor handouts.

Instructor: Rita Fisher

Office: Fisher, CFE Rm 212;

Office Hours: by appointment

Phone/email: Fisher (304)526-1259,

[rfisher@st-marys.org](mailto:rfisher@st-marys.org)

**Course Description:** Content is designed to establish a knowledge base in radiographic, fluoroscopic, mobile and tomographic equipment requirements and design. The content also provides a basic knowledge of quality control and computed tomography (CT) imaging.

**Credits:** 3 CR HR (lecture)

**Prerequisites:** MTH 121, PHY 101, PHY 101L

**Desired Learner Outcomes/Objectives:** When finished with this course the student will be able to:

1. Describe and understand electrostatics, electrodynamics, and series and parallel circuits, as they are applied to an x-ray tube.
2. Compare and synthesize different types of x-ray equipment and how they work.
3. Discuss and synthesize all aspects of an x-ray tube, its properties and components.
4. Understand, compare, and discuss special imaging systems and their use.
5. Differentiate between quality improvement/management, quality assurance and quality control.
6. List the elements and benefits of a quality management program to the patient and the department.
7. Discuss the proper test equipment/procedures for evaluating the operation of an x-ray generator.

Evaluate the results of basic QC tests. **Evaluation/Measurement/Assessment of Learner Outcomes:**

Course grade will be based on assignments, exams, quizzes and a final written exam:

Exams 70%

Assignments /Quizzes 10%

Final 20%

1. In class exercises, quizzes, homework
2. Grades will be determined by the following scale:  
92.3-100 A  
84.3-92.2 B  
74.3-84.2 C  
Below 74.3 F

### Policy Statements:

1. **Attendance:** Regular attendance is expected. Students who miss more than two classes will receive a one letter drop in the final grade. You cannot pass the course with more than four absences. You must be present at the beginning of the class and stay until the end of class in order to be counted present. The School of Medical Imaging follows Marshall University inclement weather policy. Refer to the Student Handbook.
2. **Preparation, participation, punctuality.** All preparation material should be completed prior to its scheduled discussion in class. All class sessions will be conducted with the assumption that all appropriate readings and/or assignments have been completed. Doing the preparation work prior to class will allow you to identify specific topics with which you need the most help, and you can then raise the pertinent questions when the topic is scheduled for class time. Not all assigned information will be reviewed in class. Additionally, information that may not have been assigned may be reviewed in class. If you have a question about a particular subject, you have the responsibility of using class time to get your questions answered or make an appointment for individualized help.

This necessitates having attempted the work prior to class. Class time should be used to clarify issues; it is difficult to know what issues you need to have clarified if you have not prepared.

3. **Academic integrity:** Please refer to the Student Handbook. Students may not copy or utilize prior exams as study material unless provided by the instructor for review. Students who obtain copies of old exams from current or former students will be sanctioned.
4. **Make-up assignments:** Unexcused late assignments will not be accepted (or will receive 50% credit). Students who miss scheduled exams may make them up only in the event of a medical emergency or by prior arrangement with the instructor.
5. **Missed classes:** If you are absent, it is your responsibility to find out from a classmate what notes, handouts, assignments, or other course material you missed and to make arrangements with me to receive handouts.
6. **Office hours:** Instructors are available to meet individually by appointment.
7. **Learning Disabled Students:** consideration toward learning disabled students will be in accordance to SMI Student Handbook policies. Please make certain the instructor is made aware of any special needs.
8. **Computing policy at SMMC:**
  1. Authorized users of SMMC or other clinical affiliates institutional networks are those individuals who have been granted a username and password. Unauthorized use of usernames or passwords is prohibited
  2. Use of computer systems in the clinical setting is limited to authorized patient data entry. Unauthorized access or attempts to access privileged patient information is a HIPAA violation and may result in dismissal from the SMI.
  3. Students are provided access to the Internet through computers located in the School of Nursing Library, the computer lab and the SMI office. **Internet access is limited to assigned research projects.** Students may not access personal e-mail accounts (such as Hotmail or Yahoo) from these computers. Non school related use of the internet is prohibited. Students may access the internet via computers located in the Mojo/vending area in the hospital.
  4. Internet access at SMMC is monitored by Information Services. Any attempts to download material of an obscene nature may result in dismissal from the SMI.
  5. Students have access to computers located in the computer lab next to the SMI classroom. Students may not store information of the hard drive of these computers.
  6. Users must adhere to the ethical standards governing copyright, software licensing, and intellectual property.
  7. Suspected violation of these guidelines constitutes unacceptable use of information resources, and may violate other institutional policies and/or state and federal law including HIPPA. Suspected or known violations should be reported to the appropriate supervisory authority. The SMI and/or law enforcement agencies will process violations.
  8. Violations may result in revocation of computing resource privileges, academic dishonest proceedings, disciplinary action or legal action.
  9. Violations are subject to the appeal or grievance process.
  10. Students should refer to computer policy in the CFE Student handbook

### Proposed Course Schedule.

Dates and content are subject to change as the semester progresses. Changes will be announced in class as far in advance as possible.

<i>Date</i>	<i>Reading Assignment/Exam</i>	<i>Homework/Due Date</i> <i>(additional TBA)</i>	
Jan 2	Radiation Concepts Chapter 2	Key terms	
Jan 7	Electricity Chapter 3		
Jan 9	Electricity		
<b>Jan 14</b>	<b>EXAM 1</b>		
Jan 16	Magnetism Chapter 4	Key terms	
Jan 21	Electromagnetism		
Jan 23	Controlling Electrical Current		
Jan 28	Rectification		
<b>Jan 30</b>	<b>Exam 2</b>		
Feb 4	Types of X-ray equipment Chapter 5	Key terms	
Feb 6	Circuit		
Feb 11	Power		
Feb 13	X-ray circuit/generators		
Feb 18	CT generator Chapter 44		
Feb 20	AEC		
<b>Feb 25</b>	<b>Exam 3</b>		
Feb 27	Cathode/Anode Chapter 6	Key terms	
Mar 3	Tube Housing		
Mar 5	CT Tube		
Mar 10	Heat Ratings		
<b>Mar 12</b>	<b>Exam 4</b>		
Mar 17	Fluoroscopy/Chapter 40		
Mar 19	Fluoroscopy		
Mar 24-26	<b>SPRING BREAK</b>		
Mar 31	Digital Fluoroscopy		
Apr 2	<b>Exam 5</b>		
Apr 7	Tomography Chapter 41		
Apr 9	Specialized Imaging Techniques/Chapters 39,42-43,45		
Apr 14	Specialized Imaging Techniques		
Apr 16	<b>Exam 6</b>		
Apr 21	Basic QA/Chapter 33/handouts	Chp 33: Key	
Apr 23	Basic QC/Chapter 33/handouts		
Apr 28	Basic QC		
Apr 30	<b>Exam 7</b>		
May 5	<b>Review</b>		
May 7	<b>Final</b>		