

# PHY 540 Medical Imaging Physics & BME 659 Medical Imaging

Spring 2019, 3 credits

Physics Department Administrative Coordinator, Ms KC Colston (216) 687-2425

## Overview

### **Description:**

A survey of medical imaging, its modalities, and the physics underlying its successes.

### **Objectives:**

- To provide the knowledge needed to successfully converse with physicians, medical physics practitioners, and other involved with imaging for diagnosis.
- To enhance critical thinking and scientific reasoning as they apply to medical physics and in particular medical imaging physics.

**Prerequisites:** The equivalent of a minor in undergraduate physics or permission of instructor.

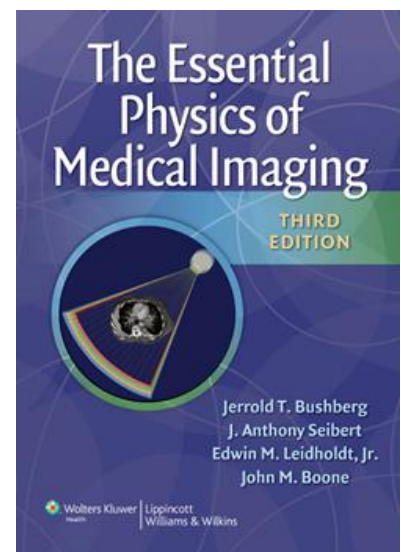
**Textbook:** *The Essential Physics of Medical Imaging, Third Edition* by Jerrold T. Bushberg PhD, J. Anthony Seibert PhD, Edwin M. Leidholdt PhD, John M. Boone PhD

ISBN/ISSN **9780781780575**, Publication Date December 20, 2011

<https://shop.lww.com/Essential-Physics-of-Medical-Imaging/p/9780781780575> or from any other reasonable source.

### Recommended for additional reading

Many excellent free texts are available at the The International Atomic Energy Agency, Section of Nuclear Medicine and Diagnostic Imaging (NMDI) pages at <http://www-naweb.iaea.org/nahu/NM/about.html> and their publications at <http://www-naweb.iaea.org/nahu/NM/publication.html>.



Download the free *Diagnostic Radiology Physics, A Handbook for Teachers and Students* and its *Corrigendum* from <https://www-pub.iaea.org/books/IAEABooks/8841/Diagnostic-Radiology-Physics-A-Handbook-for-Teachers-and-Students>

Download other publications as needed.

## **Syllabus**

### **Classes and Homework:**

The class will meet on Mondays and Wednesdays from 4:30 PM to 5:45 PM

January 14, 16, 23, 28 and **NOT on 30\***

February 4, 6, 11, 13, 20, 25, and 27

March 4, 6, 18, 20, 25, and 27

April 1, 3, 8, 10, 15, 17, 22, 24, and 29

May 1

The final exam is tentatively scheduled to take place on May 6<sup>th</sup> from 4:00 to 6:00 PM.

- It is strongly advised that the textbook chapters (and any supplemental material) be read in advance of class discussions.
- Class time will include discussions of the knowledge gained from the readings and discussions of real-world applications.
- Active participation in the classroom is essential to gaining mastery of the material, therefore participation is strongly encouraged.
- Homework problems may be assigned for grading.

### **Exams and Final Grades:**

- Students will be allowed to bring a calculator and one 8.5"×11" sheet to the exams filled with handwritten information of the students' choice. No other notes are allowed. No cell-phones are allowed.
- Make-up exams will not be available. (For a truly, and very well documented, extenuating circumstances – see Dr. Weinhaus.)
- Exam #1, 15% (early in the course); Exam #2, 25% (around the 2/3 point); Final exam 50%, Misc. 10%. Subject to change.
- To make during the semester exams part of the learning process, a “repêchage” will be available (see reprint entitled *Repechage: A second chance at learning*). Note that there will be no repechage for the final exam.

Academic Standing, Grades and Grading, and Academic Integrity policies will be applied as per their official descriptions in CSU materials.

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\* Traveling on CSU business. See email thread on making up the 75 minutes.