

COURSE SYLLABUS

ELECENG 437: Introduction to Biomedical Imaging

Instructor: Dr. Mahsa Ranji

Lectures: T/Thu 3:30pm- 4:45pm.

Homepage: Desire2Learn (D2L)

Instructor Office: EMS 1195

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E-mail: ranji@uwm.edu

Office Hours: 2 hours per week (T/Thu, 4:45-5:45pm)

Text:

1) *Lecture notes.*

2) *Medical Imaging Signals and Systems*, Jerry L. Prince and Johnathan M. Links, Prentice Hall 2005.

Recommended textbook:

3) *Introduction to Biomedical Imaging*, Andrew Webb, Wiley Inter-Science 2003.

Prerequisite: EE 310.

Objective:

The course fits within the goals of the department to foster and facilitate interdisciplinary research, and it will provide students with the necessary fundamental concepts to do research in biomedical imaging. Topics of the course will cover, image characteristics, Fourier transforms, image acquisition and processing e.g. convolution, sampling, resolution, contrast, filtering; tissue optics, x-ray; CT; ultrasound; and MRI.

Course Policy:

- 10 Homework Assignments (20%).
- Exams (two in class, 40% each), non-cumulative
Exam 1 (40%); Exam 2 (40%)
- **Grading Differentiation between Undergraduate and Graduate Students:**
 - 1) Graduate exam will be 30% different than undergraduate exam. The questions for graduate students will be more math intensive.

Homework: Due one week after assignment in class.

Workload:

This course meets weekly for a total of 35 contact hours. You are required to read 370 pages, that approximately takes 36 hours. There is a total of 9 required homework assignments, each of which will take 12 or more hours. This yields a total workload of 179 hours or more.

Course Schedule:

Week	Topic
1	Introduction
2	Image Characteristics
3	Fourier Transforms in Spatial Domain
4	X-ray
5	Computed Tomography
6	Computed tomography
7	Exam 1
8	Ultrasound
9	Ultrasound
10	Ultrasound
11	MRI
12	MRI
13	MRI
14	Exam 2

MISCONDUCT Policy:

- Academic misconduct is handled according to procedures specified in Chapter UWS 14 and the UWM implementation provisions (Faculty Document 1686).