

EEE-473/573: MEDICAL IMAGING

FALL 2021-2022

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Course Textbook: Medical Imaging Signals and Systems, 2nd Edition
Jerry L. Prince and Jonathan M. Links, Pearson Prentice Hall
Can be found in METEKSAN bookstore, or at the library.

Recommended Reference: Principles of Magnetic Resonance Imaging,
Dwight G. Nishimura, Lulu.com.

Pre-requisite: EEE-321 Signals and Systems for EEE-473.
Solid knowledge of Fourier Transform for EEE-573.

Topics: Fundamentals and applications of some of the most important medical imaging modalities. These modalities will be analyzed on a signals & systems basis.

- Multi-dimensional Signals & Systems
- Image Quality, Contrast, Resolution
- X-ray
- Computed Tomography (CT)
- Magnetic Resonance Imaging
- Magnetic Particle Imaging
- Nuclear Medicine (PET and SPECT)
- Ultrasound (if time permits)

Lecture Hours Per week: There will be 3.5 hours of lectures every week, unless otherwise announced.

Moodle: Moodle will be the main interface for correspondence among all participants of EEE-473/573. All information related with the course will be exchanged through Moodle. You will submit your homework assignments/projects through Moodle, as well.

Grading:

		How many	Contribution to Final Grade
Homework		~4-5	15%
Quiz		~4-5	10%
Midterm		1	25%
Project	Proposal	1	25%
	Report	1	
	Presentation	1	
Final		1	25%
Total			100%

Homework: Weekly or bi-weekly homework assignments. About 25% of each assignment will be MATLAB questions.

Quiz: Pre-announced in-class quizzes related to topics covered in the homework. Quiz duration will be approximately 30 minutes each.

Project: Groups of 2 or 3 students. Students will form their own groups. Groups can include both graduate and undergraduate students.

Topic: The project can be related to any one of the medical imaging modalities covered in EEE 473/573, or can introduce other biomedical imaging techniques that are not covered in this class.

Submissions: A proposal, a final report including your codes, a video presentation.

Grading Policy: There will be a 12-hour “grace period” after all submission deadlines (i.e., no points will be lost if you submit your assignment within 12 hours of the deadline). There will be a 50% penalty if you submit after 12 hours but within 24 hours past the deadline. No submissions beyond 24 hours past the deadline.

Criteria for FZ Grade:

- Each student must work on and turn in all HW assignments and project-related submissions. Empty papers will NOT be accepted.