

SCTC 2101 Seeing Through Ourselves- Medical Imaging Physics

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Office Hours TTh 1-2

Prerequisites: Physics 1062 or Chem 1032 with Physics 2021 co-requisite

Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at 215-204-1280 in 100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities.

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty and Academic Rights and Responsibilities (Policy #03.70.02) which can be accessed through the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02.

Course Goals:

The course is a non-mathematical introduction to the science behind medical technology, mostly imaging techniques. The tremendous value of these techniques for medical diagnosis and treatment monitoring is not widely appreciated. Students will learn enough about the science behind leading medical technologies (endoscopy, laser surgery, ultrasound imaging, x-rays and CT scans, PET, MRI, radiation therapy) to demystify them and understand why physicians select them in different situations. Discussion of each technique will begin with a description of the underlying basic science topic.

Required Readings:

The textbook for the course will be Introduction to Physics in Modern Medicine (2nd ed) by S. A. Kane (CRC Press, 2009). Most of the material in the book will be assigned as reading.

Week:	Topic	Readings (textbook above
1	25 Aug	Medical Concepts
2	1 Sept	Physics Concepts
	Wed., 3 Sept:	**field trip**
3.	8 Sept	Fiber Optics
4.	15 Sept	Lasers
5.	22 Sept	Cooking & Cutting
6.	25 Sept.	In Class Midterm
7.	29 Sept	Sound & Ultrasound
8	6 Oct	Ultrasound Imaging
9.	13 Oct.	X-rays
10.	20 Oct.	Radiograms and CT
11.	27 Oct.	Radioactivity and Antimatter
12.	3 Nov.	PET and SPECT
13.	10 Nov.	Radiation Biology & Risk
14.	17 Nov.	Radiation Therapy
15.	1 Dec.	MRI

Grading Policy:

The course grade will be composed of 15% attendance, 25% in-class midterm, 30% online homework, and 30%

for the final examination.