

16. Introduction to Optical and Acoustic Imaging I and II
2 units, Ross Boltyanskiy, October 20 and 21, 2025

October 20, 2025

I. Optics

- a. Overview of fundamentals: E+M radiation, interaction with media, tools to guide and capture light
- b. Basic principles of microscopy
- c. Types of microscopy and applications in cancer: Widefield, confocal, fluorescent, electron, Raman spectroscopy, 2-photon
- d. Bioluminescence
- e. Genetic reporter systems

October 21, 2025

II. Acoustics:

- a. Fundamentals of sound
- b. Basics of an ultrasound
- c. B-wave, Doppler, Elastography
- d. Contrast agents and applications in cancer