

22. Introduction to Nuclear Imaging I and II
2 units, Ross Boltyanskiy, October 28 and 29, 2025

October 28, 2025

I. Nuclear Imaging

- a. Source of signal: basics of radiation, half life, activity
- b. Implementation in different types of scanner: PET, SPECT, gamma camera
- c. Radiopharmaceuticals
- d. Contrast, sensitivity, specificity
- e. Nuclear imaging tailored to cancer
- f. Combinations of modalities + theranostics

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II. X-ray

- a. Fundamentals of x-rays
- b. Interaction with tissues, detection and contrast
- c. Applications

Paper discussion:

Non-invasive measurements of blood glucose levels by time-gating mid-infrared optoacoustic signals. Uluc et al, Nature Metabolism, 2024.

<https://doi.org/10.1038/s42255-024-01016-9>