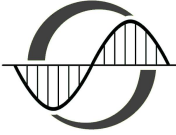




UNIVERSITÀ
degli STUDI
di CATANIA



DIPARTIMENTO DI FISICA E ASTRONOMIA
“ETTORE MAJORANA”

DOTTORATO DI RICERCA IN FISICA
CICLO XXXIX A.A. 2023/2024

Advanced Physics of Medical Imaging

CFU – 3

Teaching staff

Name Surname: Giuseppe Stella

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Office: T07 - DFA

Reception hours: upon student request

Program of the course:

X-Ray 2D/3D imaging; X-Ray application: radiography and Computed Tomography; Detectors for clinical applications.

Beam quality specifier; Determination of HVL; Patient dosimetry; Different methods for absorbed dose measurements; Correction factors

Nuclear Magnetic Characteristics of the Elements; The Magnetic Resonance Signal; Magnetization Properties of Tissues: T2 Relaxation and T1 Relaxation;

Basic Acquisition Parameters; “K-Space” Data Acquisition and Image Reconstruction; MR Image Characteristics

Bibliography:

Bushberg, Jerrold T., and John M. Boone. The essential physics of medical imaging. Lippincott Williams & Wilkins, 2012.

Ma CM, Coffey CW, DeWerd LA, Liu C, Nath R, Seltzer SM, Seuntjens JP; American Association of Physicists in 27 Medicine. AAPM protocol for 40-300 kV x-ray beam dosimetry in radiotherapy and radiobiology. Med Phys. 2001 28 Jun;28(6):868-93.

Scientific paper and slides provided by the teacher

The final exam consists in a discussion on the topics covered by the course.