

## COURSE SYLLABUS

### Instrumentation For Diagnostic Imaging and Radiotherapy

1920-2-H4102D014-H4102D042M

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#### Aims

Knowledge on:

- X-ray based, US-based, Magnetic Resonance, Nuclear Medicine and hybrid diagnostic imaging instrumentation
- Radiotherapy instrumentation

#### Contents

Diagnostic imaging modalities and radiotherapy systems

#### Detailed program

Diagnostic imaging instrumentation:

- X-ray imaging: revision of physical principles and image formation; multislice CT, cone beam CT, mammography, angiography
- Magnetic Resonance Imaging: revision of physical principles and T1/T2 image formation; diffusion weighted and perfusion weighted MRI, fMRI, spectroscopy
- Echography: physical principles and image formation; echographic probes
- Nuclear Medicine Imaging: revision of physical principles and image formation; PET/CT and PET/RM hybrid instrumentation

Radiotherapy instrumentation:

- Linear accelerator and components
- Intensity Modulated Radiotherapy (IMRT), Image Guided Radiotherapy (IGRT), tomotherapy
- Cyber knife, gamma knife

## **Prerequisites**

Physics basic knowledge

## **Teaching form**

Lectures

## **Textbook and teaching resource**

Slides presented during the course

## **Semester**

Second semester of the second year

## **Assessment method**

Two open questions of equal weight

## **Office hours**

By appointment fixed by e-mail

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