课程简介

本课程为医学影像学的入门介绍课程，目的是为医学影像学的学习和研究奠定物理基础。课程将重点讲解 x 射线成像、CT、MRI、核医学成像、超声成像等目前广泛使用的医学成像方法及其特点，同时还将介绍医学图像基础、图像质量保证和控制、辐射防护的基本原理等成像基础知识。通过本课程的训练，学生需认识和掌握医学影像的基本成像原理和方法，了解医学图像诊断的物理学依据。

先修要求：

数学分析，概率论，普通物理

课程内容:

1. 医学图像基础
2. X 射线物理及成像
3. CT 成像及三维图像重建
4. 核磁成像
5. 核医学物理及成像
6. 超声物理及成像
7. 医学图像处理基础
8. 其他生物成像方法介绍

Introduction

This course is an introductory and fundamental course for medical imaging. It will review the mathematical and physics principles for several major imaging modalities used in today's biomedical imaging practice in research labs and in clinical settings. The main topics to be covered are X-ray imaging, Computed tomography (CT), Magnetic resonance imaging (MRI), Nuclear medicine, Ultrasound (US) imaging. The contents of quality control and radiation protection will be also included.

Prerequisites

Calculus，Probability theory，General Physics

Contents:

1. Fundamental of medical imaging
2. X-ray imaging physics
3. Computer Tomography and 3D image reconstruction
4. Magnetic Resonance Imaging
5. Nuclear medicine
6. Ultrasound imaging
7. Medical image processing and analysis
8. Other biomedical imaging technologies