UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

BIOELETTROMAGNETISMO APPLICATO

Anno immatricolazione	2019/2020
Anno offerta	2020/2021
Normativa	DM270
SSD	ING-INF/02 (CAMPI ELETTROMAGNETICI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	ELECTRONIC ENGINEERING
Curriculum	PERCORSO COMUNE
Anno di corso	2°
Periodo didattico	Secondo Semestre (08/03/2021 - 14/06/2021)
Crediti	6
Ore	45 ore di attività frontale
Lingua insegnamento	Italian
Tipo esame	ORALE
Docente	PASIAN MARCO (titolare) - 6 CFU
Prerequisiti	Physics, in particular basic electromagnetism. Basic knowledge of biological tissues and organs.
Obiettivi formativi	This course is intended for the MS student in Bio-engineering. It provides the basic competences to understand the use of microwaves (and radio frequencies) in the field of bio-engineering, either for diagnostics or therapies. The student will understand how to manage and deal with this emerging technology.
Programma e contenuti	- Fundamental aspects of the electromagnetism - Fundamental aspects of microwave devices and antennas - Dielectric characterization of biological materials - Dosimetry, specific asbortion rate (SAR) - Regulations about electromagnetic fields - Interaction between electromagnetic fields and biological systems

	- Ex-vivo and in-vivo measurements - Numerical techniques for the analysis of the interaction between biological systems and microwaves - Imaging and diagnostic techniques at microwaves - Biomedical devices at microwaves - Implantable and wearable microwave devices
Metodi didattici	Lectures (hours/year in lecture theatre): 42 Practical class (hours/year in lecture theatre): 8 Practicals / Workshops (hours/year in lecture theatre): 0
Testi di riferimento	Material made available by the lecturer
Modalità verifica apprendimento	Oral examination. The student is invited to prepare a short presentation about a topic of interest for him/her, deepening the comprehension of some aspects discussed during the course. Alternatively, the student is invited to present in detail his/her favorite topic. In any case, the second part of the exam comprises some questions about the overall course.
Altre informazioni	
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile