



# UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

## BIOELETTROMAGNETISMO APPLICATO

Anno immatricolazione	2020/2021
Anno offerta	2021/2022
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 (07/03/2022 - 17/06/2022)
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	<ul style="list-style-type: none"><li>- Fundamental aspects of the electromagnetism</li><li>- Fundamental aspects of microwave devices and antennas</li><li>- Dielectric characterization of biological materials</li><li>- Dosimetry, specific absorption rate (SAR)</li><li>- Regulations about electromagnetic fields</li><li>- Interaction between electromagnetic fields and biological systems</li></ul>

	<ul style="list-style-type: none"> <li>- Ex-vivo and in-vivo measurements</li> <li>- Numerical techniques for the analysis of the interaction between biological systems and microwaves</li> <li>- Imaging and diagnostic techniques at microwaves</li> <li>- Biomedical devices at microwaves</li> <li>- Implantable and wearable microwave devices</li> </ul>
<b>Metodi didattici</b>	<p>Lectures (hours/year in lecture theatre): 42  Practical class (hours/year in lecture theatre): 8  Practicals / Workshops (hours/year in lecture theatre): 0</p>
<b>Testi di riferimento</b>	Material made available by the lecturer
<b>Modalità verifica apprendimento</b>	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.
<b>Altre informazioni</b>	
<b>Obiettivi Agenda 2030 per lo sviluppo sostenibile</b>	Goal 3: Ensure healthy lives and promote well-being for all at all ages <a href="#">\$Ibl legenda sviluppo sostenibile</a>