



UNIVERSITÀ DI PAVIA

Anno Accademico 2019/2020

BIOFOTONICA B

Anno immatricolazione	2018/2019
Anno offerta	2019/2020
Normativa	DM270
SSD	FIS/03 (FISICA DELLA MATERIA)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	ELECTRONIC ENGINEERING
Curriculum	PERCORSO COMUNE
Anno di corso	2°
Periodo didattico	Secondo Semestre (02/03/2020 - 12/06/2020)
Crediti	3
Ore	23 ore di attività frontale
Lingua insegnamento	Italian
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	MINZIONI PAOLO (titolare) - 3 CFU
Prerequisiti	Having passed Physics 2 exam, thus demonstrating a proper comprehension of the origin and properties of electromagnetic waves.
Obiettivi formativi	<p>The main goal of the course is to provide information about photonic techniques recently developed in the biomedical field for diagnosis and treatments.</p> <p>At the end of the course the student will be able to:</p> <ol style="list-style-type: none">1. Understand the different possibilities offered by photonic technologies2. choose the right components for different applications3. Develop critical comparisons between different techniques4. Properly communicate, by also using adequate graphical materials, the working principle of different photonic systems

5. Evaluate the possibility to modify an existing apparatus so as to comply with changes in the experimental needs.

Programma e contenuti

The course covers 10 main topics:
01- Short review of biological systems
02- Optical Imaging
03- Raman
04- Biosensors
05- Microfluidics
06- Optical trapping
07- Optical devices for cell manipulation
08- Acoustofluidics
09- Implantable biophotonic systems
10- Photo dynamic therapy

Metodi didattici

Lectures (hours/year in lecture theatre): 23
The possibility to carry out some lessons directly at the Integrated Photonics Lab will also be evaluated

Testi di riferimento

We will mainly refer to scientific papers and on the slides used in the lessons
The material will be made available by using the course website

Modalità verifica apprendimento

The exams consists in a presentation prepared by the student in which a particular topic is treated in detail and on a general discussion about the techniques presented in the course

Altre informazioni

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Obiettivi Agenda 2030 per lo sviluppo sostenibile

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