Syllabus

Descrizione corso

Titolo insegnamento	Plastic and Molecular Optoelectronics
Codice insegnamento	46087
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	FIS/01
Lingua	Inglese
Corso di Studio	Corso di Dottorato di ricerca in Advanced-Systems Engineering
Altri Corsi di Studio (mutuati)	
Docenti	prof. Franco Cacialli, Franco.Cacialli@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/47601 dr. Manuela Ciocca, Manuela.Ciocca@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/44873
Assistente	
Semestre	Secondo semestre
Anno/i di corso	2025/2026
CFU	3
Ore didattica frontale	30
Ore di laboratorio	
Ore di studio individuale	45
Ore di ricevimento previste	7
Sintesi contenuti	
Argomenti dell'insegnamento	fcac
Parole chiave	Organic semiconductors, photophysics, OLEDs, PVDs, bioelectronics

Prerequisiti	Physics I and II. Basic Electronics
Insegnamenti propedeutici	
Modalità di insegnamento	Lectures (online or in presence)
Obbligo di frequenza	
Obiettivi formativi specifici e risultati di apprendimento attesi	
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	1. Knowledge and understanding Knowledge and understanding of: - the fundamental physical and chemical properties fof organic semiconductors (OS) - Understanding basic operation of organic light-emitting diodes (OLEDs) - Understanding basic operation of light-emitting electrochemical cells (LECs) - Understanding basic operation of organic solar cells 2. Applying knowledge and understanding 3. Ability to apply knowledge for solving given problems, including solving them with numerical data, approximating significant numbers, and taking care of the notation of units. Making judgements 4. Ability to judge plausibility of results. Communication skills 5. Maturing of technical-scientific terminology. Ability to learn 6. Learning skills to independently study and apply methods of physics for specific applications beyond topics covered in this lecture.
Modalità di esame	Oral exam in which the students are expected to give a 20 minutes presentation on a topic of their choice among those treated during the course and of particular relevance to their PhD project. This will serve as a basis. Additional questions will be asked to test basic understanding and ability of the student to apply the concepts to relevant applications.

Criteri di valutazione	The grading will be based on: - Clarity and correctness of the presentation. - The correctness of the answers given to the questions, and of the terminology used.
Bibliografia obbligatoria	Lecture notes.
Bibliografia facoltativa	[1] Electronic Processes in Organic Crystals and Polymers, M Pope, C Swenberg, Oxford University Press, 2nd ed., Oxford, 1999 [2] *Organic Light-Emitting Devices*, K Müllen and U Scherf eds., Wiley-VCH, Weinheim, 2006 *[3] Organic Electronics: Foundations to Applications*, SR Forrest, Oxford University Press, Oxford, 2020
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	Istruzione di qualità