UNIVERSITÀ DI PAVIA

Anno Accademico 2019/2020

PHYSICS OF SOLID STATE ELECTRONIC DEVICES

Enrollment year	2019/2020
Academic year	2019/2020
Regulations	DM270
Academic discipline	FIS/03 (MATERIAL PHYSICS)
Department	DEPARTMENT OF PHYSICS
Course	
Curriculum	Fisica della materia
Year of study	1°
Period	1st semester (30/09/2019 - 17/01/2020)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	BELLANI VITTORIO (titolare) - 6 ECTS
Prerequisites	Basic notions of electromagnetism, solid state physics.
Learning outcomes	Learning of the concepts concerning nanomaterials, their physical properties and their experimental study.
Course contents	The course deals with the physics of nanomaterials and nanodevices: Zero, mono and two-dimensional nanomaterials. Quantum dots of metallic materials, insulators and semiconductors. Two-dimensional materials of organic and inorganic compounds. Some examples of nanomaterials: Semiconductor nanowires, carbon nanotubes, graphene. Some techniques for preparing nanomaterials. Experimental methods for the characterization of nanomaterials and for the study of their physical properties. Technologies for the manufacture of optical, electronic and optoelectronic nanodevices.

	Application of nanomaterials. Nanomaterials in lithium batteries. Functionalized nanomaterials for sensors and nanoelectronic devices. Nanomaterials for optoelectronics based on spin control (spintronics).
Teaching methods	Lectures
Reccomended or required readings	The most actual bibliography, based on books and scientific papers, will be indicated during the course.
Assessment methods	Oral examination with the possibility of a seminar on a topic covered in the course.
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile