

**Course Syllabus for
Industry 4.0 PhD
(years 2022-23 /2023-24)**

Course title	Advanced nanomaterials: properties and applications
Scientific Discipline Sector	CHIM/02
Hours of instruction	10 hours
CFU	1 CFU
Semester	first semester
Goal	The course aims at providing the basic principles of materials at nanoscale from their fabrication to their individual and collective properties; it aims at offering the fundamental tools to understand the role of nanostructured materials as enabling technology for the Industry 4.0 and sustainability
Syllabus	Introduction to nanomaterials: properties of materials at nanoscale Synthesis of nanoparticles and their size/shape control and surface functionalization From individual nanoparticles to nanocomposites and nanoparticle-based solid films and patterned nanostructures Nanomaterial applications in opto-electronic, computing devices, in the field of energy and healthcare for Industry 4.0
Bibliography	Slides and support material from lecturer.
Examination method	Final examination in class