



Direzione Ricerca,  
Innovazione e  
Internazionalizzazione

**UNIVERSITÀ  
DI TORINO**

**ID**

**VP\_017\_BIOTEC**

## **Visiting Professor Program Academic Year 2025/2026**

**TEACHING COMMITMENT: 20 hours**

**COURSE TITLE**

**Nanoparticles for Medical Applications**

**TEACHING PERIOD**

I semester

**SCIENTIFIC AREA**

Chemical Science

**LANGUAGE USED TO TEACH**

English

**COURSE SUMMARY**

- 1) This course provides a comprehensive overview of the synthesis and characterization of nanoparticles engineered for targeted drug delivery to pathological tissues. Particular emphasis is placed on their applications in delivering antibiotics and antitumor agents. The latter part of the course explores the use of nanoparticles in imaging-guided medical technologies, offering an integrated perspective on their multifunctional roles in contemporary healthcare.
- 2) This course focuses on the preparation of nanoparticles for drug delivery applications using advanced techniques such as microfluidic synthesis and spray drying. Emphasis is placed on the methodologies for nanoparticle fabrication and the corresponding characterization techniques to ensure optimal performance.
- 3) PLGA (poly(lactic-co-glycolic acid)) nanoparticles are biodegradable and biocompatible polymer-based particles that have been extensively studied for various biomedical applications. PLGA is a copolymer of two monomers, lactic acid and glycolic acid. This course focuses on the different

methods used for synthesis of these nanoparticles and their principal applications for drug delivery, vaccine delivery, gene delivery, imaging, and tissue engineering.

### **LEARNING OBJECTIVES**

- 1) Provide an overview of the key applications of nanoparticles in nanomedicine. Equip students with the foundational knowledge, literature resources, and analytical tools necessary to select the most suitable nanoparticles for specific applications.
- 2) Provide the basic principles and advantages in using microfluidic for nanoparticles preparation.
- 3) To highlight the key advantages of PLGA, including its biocompatibility, customizable release profiles, and versatility in enabling effective and targeted therapeutic and diagnostic applications.

### **OTHER ACTIVITIES BESIDE THE COURSE**

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### **VISITING PROFESSOR PROFILE**

A scientist with a strong background and extensive experience in nanotechnology, particularly in nanomedicine and diagnostic applications.

### **CONTACT REFERENT**

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