

**Course:**        **Advanced Topics in Peptide Production and Pharmaceutical Applications**

**Duration:**     24 hours

**Teacher(s):**   **Mark Spaller; Alvaro S. Siano; Antonio Ricci**

**Curriculum:**   Scienze Chimiche

**Description:**

**1<sup>st</sup> module "Advanced Topics in Pharmacology"** aims to: i. Provide an overview of fundamental and contemporary pharmacology principles (how both natural and synthetic compounds (e.g. peptide-based drugs) affect biological systems. ii. Cover specialized topics on small molecules, peptides, and proteins for drug discovery. iii. Demonstrate connections between core chemistry research and pharmacological applications.

**2<sup>nd</sup> module "Pharmaceutical peptide-based active principles: from their natural sources to their biorational design"** aims to provide an overview on: i. Advanced extraction techniques, characterization and screening of peptide-based active ingredients from natural sources. ii. Advanced peptide drug design, through personalized predictive models based on Machine Learning (ML). iii. Advanced low environmental impact peptide production techniques. iv. Updated examples of the use of peptide-based active ingredients against diseases such as Alzheimer's and different types of tumors.

**3<sup>rd</sup> module "Advanced Strategies for industrial production of peptide active ingredients"** aims to describe industrial scale peptide production strategies in pharmaceutical companies.