Direzione Ricerca,
Innovazione e
Internazionalizzazione

UNIVERSITÀ
DI TORINO

ID

VP_030_CHIM/STF

Visiting Professor Program
Academic Year 2025/2026

TEACHING COMMITMENT: **12 hours**

COURSE TITLE

Pharmaceutical Synthesis and Development Methodologies

TEACHING PERIOD

II semester

SCIENTIFIC AREA

Medicinal Chemistry

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

Master level)

The course aims to provide a student of Chemistry LM basis for his future professional placement in Research / Development within of Drug Design & Development areas. The course starts by introducing the general principles of Medicinal Chemistry, the branch of chemistry dedicated to the discovery, development, identification, and interpretation of the mode of action of biologically active compounds at the molecular level. In the following, the course will detail all the steps that a bioactive molecule (hit) will follow from its identification, the following deep optimisation (lead) in order, after clinical studies and acceptance by FDA/EMA, to become a drug and reach the market. Maintaining the organic molecule as the central point, students will be gradually introduced to the language and methodologies that a Chemist uses to address the various issues involved in the pharmaceutical field. Besides deepening the concepts of pharmacodynamics and pharmacokinetics, the course will also explore two general themes: pharmaceutical synthesis (adaptation of synthesis methods advanced scope pharmaceutical) and pharmaceutical development (technical

optimization of the synthetic process by bringing the lab to pilot plant then to large scale production).
PhD level)
The same above concepts will be treated inside the description of one or more case studies.

LEARNING OBJECTIVES

The student will acquire the knowledge of the principles of Medicinal Chemistry in the design of bioactive molecules. The student will initially be able to judge the possibility that an organic molecule can be considered as a potential drug (drug-like profile, in vitro, in vitro activity) providing for possible weaknesses (solubility, bioavailability, metabolic stability, toxicity....). The target molecule will then be treated in terms of pharmaceutical synthesis and then pharmaceutical development, basic steps to bring a target structure from the hood of Chemical until its production in large scale. As the last step, the regulations behind a certified preclinical study and phase I/II clinical studies will also treated.

OTHER ACTIVITIES BESIDE THE COURSE

Visiting professor will give seminars and conferences addressed to the students of the PhD course in Pharmaceutical and Biomolecular Sciences, as well as to research fellows of the Department of Chemistry and Pharmaceutical Technology and the Department o

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VISITING PROFESSOR PROFILE

The Visiting Professor should have a proved extended research experience in the field of drug discovery, development, and manufacturing both as a scientist and as a manager. Translational experience in drug discovery not only in academia but also in multiple R&D venues (including big pharma, large biotech, start- up ventures and nonprofit research institutes) is mandatory. Experience in regulatory affairs and expertise in translation from preclinical to clinical studies is highly recommended. Due to the intermediate level of the background of the students (1rd year of a two year Master course), visiting professor should combine the rigorous presentation of the topics with the ability to give the basic information, when required.

CONTACT REFERENT

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