

Direzione Innovazione e Internazionalizzazione

> ID VP008_BIOTEC

Visiting Professor Program Academic Year 2023/2024

TEACHING COMMITMENT: 16 hours

COURSE TITLE Drug Discovery: Basic Principles

TEACHING PERIOD 1st term

SCIENTIFIC AREA biophysics

LANGUAGE USED TO TEACH English

COURSE SUMMARY

Introduction to drug discovery; identification of the target and the ligand; virtual screening; drug discovery based on fragments; transformations of lead; isosterism and bioisosterism; Introduction to QSAR; synthesis of peptides and SPPS; Combinatorial Approach to Drug Discovery; example of study.

Physico-chemical properties of molecules and their influence on the interaction between drugs and their targets:

type of bond and their strength, intermolecular forces, ionization, lipophilicity

Relevance of the structures of proteins and DNA drug-receptor interaction.

Principles of Pharmacodynamics Pharmacokinetics (ADMET)

Molecular Descriptors involved in the determination of the ADME profile of potential drugs

Principles of Pharmacodynamics Pharmacokinetics (ADMET)

Structure- activity relationship and drug design

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Drug Discovery for biotechnological drugs Nanotechnology for drug delivery

LEARNING OBJECTIVES

The main objective of the course is to provide students with the basics of drug discovery and understanding the relationship between the chemical structure of molecules and their pharmacological activity. Moreover, the course prefigures to provide the student with a highly professionalized competence of business and national pharmaceutical research centers, on the different aspects of instrumental analysis in the different phases of the discovery, development and production process of the pharmaceutical industry.

TUTORSHIP ACTIVITIES

N/A

LAB ACTIVITIES

N/A

OTHER ACTIVITIES BESIDES THE COURSE N/A

VISITING PROFESSOR PROFILE

The candidate must have an in-depth knowledge on the Biophysical Characterization of a drug. In particular during the course the best techniques for measuring binding properties and characterizing interactions between small molecules, nucleic acids, lipids, sugars, peptides and proteins have to be described. The candidate should possess knowledge on the biophysical theory behind each technology and its application in lead finding, hit validation, as well as more in-depth mechanistic studies. This will enable students to gain a rapid overview of the most relevant biophysics technologies for screening and lead finding/characterization.

FURTHER INFORMATION

Lessons and seminars could be held in co-presence with UNITO Professors.

CONTACT REFERENT

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