



MEDICINAL CHEMISTRY AND ANALYSIS OF BIOTECHNOLOGICAL DRUGS

Enrollment year	2016/2017
Academic year	2018/2019
Regulations	DM270
Academic discipline	CHIM/08 (PHARMACEUTICAL CHEMISTRY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	BIOTECHNOLOGY
Curriculum	Medico-farmaceutico
Year of study	3°
Period	1st semester (01/10/2018 - 14/01/2019)
ECTS	9
Lesson hours	76 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	UBIALI DANIELA (titolare) - 3 ECTS BAVARO TEODORA - 3 ECTS DE LORENZI ERSILIA - 3 ECTS
Prerequisites	To attend this course, basic knowledge of inorganic chemistry, organic chemistry, pharmacology and immunology is required.
Learning outcomes	<p>Basic knowledge for the comprehension of the structure-activity relationships (SAR) of active pharmaceutical ingredients. Basic knowledge of protein and nucleic acid structure in the drug-target interaction.</p> <p>Basic knowledge of analytical separation techniques for qualitative and quantitative analysis of biopharmaceuticals.</p>
Course contents	Medicinal chemistry: definitions (drug, drug discovery, drug target, drug design), chemical-physical properties of molecules (chemical bonds,

	<p>intermolecular forces, ionization, lipophilicity etc.). Agonists and antagonists: cholinergic and adrenergic systems. Enzyme inhibitors. Non Steroidal Anti-Inflammatory Drugs (NSAIDs), opioids, local anesthetics. Nucleosides and nucleotides.</p> <p>Sample preparation: liquid-liquid extraction (LLE), solid-phase extraction (SPE). High performance liquid chromatography (HPLC) and capillary electrophoresis (CE): basic concepts and instrumental aspects. Qualitative and quantitative analysis applied to biotechnological drugs.</p>
Teaching methods	<p>Lectures (9 CFU=72 hours). Tutorship aimed at assisting the students in the process learning. Seminars will be given by a visiting researcher (in the presence of and in close cooperation with the Professors) aimed at discussing specific case-studies and stimulating the active participation of the audience. Brief practicals on analytical instrumentation (HPLC) are envisaged at the end of the course, to complement the lectures.</p>
Reccomended or required readings	<p>"Introduzione alla Chimica Farmaceutica" G. L. Patrick, EdiSES, Napoli; "Foye's Principi di Chimica Farmaceutica" D. A. Williams & T. L. Lemke, Piccin, Padova</p> <p>Cavrini V., Andrisano V., PRINCIPI DI ANALISI FARMACEUTICA 3a ed., Esculapio; Skoog, Holler, Nieman, PRINCIPLES OF INSTRUMENTAL ANALYSIS, Harcourt Brace; Saini G., Mentasti E, FONDAMENTI DI CHIMICA ANALITICA (analisi chimica strumentale), UTET; Snyder L.R., PRACTICAL HPLC METHOD DEVELOPMENT, Wiley; Ahuja, S. Jimidar MI, CAPILLARY ELECTROPHORESIS METHODS FOR PHARMACEUTICAL ANALYSIS, Academic Press; Pawliszyn J., Lord H.L., HANDBOOK OF SAMPLE PREPARATION, Wiley; Walsh G. Pharmaceutical Biotechnology, Wiley</p>
Assessment methods	<p>Final exam on scheduled exam sessions (oral, Medicinal Chemistry and Analysis of Biotechnological Drugs, CFU 9). The student may take the exam of Medicinal Chemistry (CFU 6) as a midterm exam ("pre-appello") at the end of the lectures. In this case, if the student has passed the midterm exam, he/she will take the exam of Analysis of Biotechnological Drugs (CFU 3) on scheduled exam sessions in order to complete the whole assignment. Midterm exam (Medicinal Chemistry, CFU 6) can be taken only once, upon a certified attendance of the lectures (75%).</p>
Further information	<p>Slides used during lectures can be downloaded from the website Kiro. Tutorial videos and scientific papers (both in English) are also available in Kiro. Registration to the midterm exam is mandatory and must be done by signing up the form in Kiro by the reported deadline. Communications/notices to the students will be uploaded in Kiro, too.</p>
Sustainable development goals - Agenda 2030	<p>\$lbl_legenda_sviluppo_sostenibile</p>