Study Programme: Master Academic Studies in Chemistry

Course Unit Title: Synthesis of Biologically Active Molecules

Course Unit Code: MHO-501

Name of Lecturer(s): Assistant professor Jovana Ajduković

Type and Level of Studies: Master of Science Degree

Course Status (compulsory/elective): Compulsory

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

The course will introduce students to the new developments in synthesis of biologically active compounds.

Learning Outcomes:

Students will acquire the necessary theoretical and practical knowledge in the synthesis of biologically active molecules. Acquired knowledge will allow students to extend their knowledge of methods in organic synthesis and efficiently solve synthetic problems in the field of biologically active molecules; Capacity to select and apply synthetic procedures in order to solve synthetic problems in the domain of research work.

Syllabus:

Theory

Synthesis of antiestrogens and antiandrogens and their applications in treating cancer. Synthesis of antitumor agents. Therapeutic agents based on the progestins and corticosteroids. Synthesis and properties. Synthesis and use of anabolic-androgenic steroids. Synthesis of penicillin, cephalosporins and antibacterial sulfonamides. Synthesis of antidepressant drugs and antidiabetic drugs. Synthesis of angiotensin converting enzyme inhibitors and related compounds.

Practice

Synthesis of the selected biologically active organic compounds and confirming their structures by spectroscopic methods.

Required Reading:

1. R.S. Vardanyan, V.J. Hruby: Synthesis of Essential Drugs, Elsevier, Amsterdam, 2006.
2. G. L. Patrick: An Introduction to Medicinal Chemistry, Oxford University Press Inc., New York, 1995.
3. D. Lednicer, L. A. Mitscher: The Organic Chemistryof Drug Synthesis, Volume I-IV, John Wiley & Sons, Inc., Toronto, 1977-1990.

Weekly Contact Hours:	**Lectures:** 3	**Practical work:** 2

Teaching Methods:

Lectures, laboratory work, seminar

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	written exam	50
Practical work	20	oral exam	10
Seminar(s)	15		