COURSE OUTLINE "THE BIOMACROMOLECULES AS TARGETS FOR THERAPEUTIC APPROACHES"

1. GENERAL

SCHOOL	NATURAL SCIENCES AND HEALTH SCIENCES		
ACADEMIC UNIT	CHEMISTRY AND MEDICINE		
LEVEL OF STUDIES	POSTGRATUATE (MSc)		
COURSE CODE	BTA 111	**SEMESTER**	FIRST
COURSE TITLE	THE BIOMACROMOLECULES AS TARGETS FOR THERAPEUTIC APPROACHES		
INDEPENDENT TEACHING ACTIVITIES		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		4	5
COURSE TYPE	Special Background (Semi Optional course)		
PREREQUISITE COURSES:	There are not prerequisite courses. It is, however, recommended that students should at least have basic knowledge of Organic Chemistry and Biochemistry.		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek. The powerpoint material of the course is however in English. Teaching may be performed in English in case of foreign students participate in the postgraduate program.		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	-		

2. LEARNING OUTCOMES

Learning outcomes

At the end of this course the student will be able to:

- Understand the effect of proteins / peptides and antibodies as drugs, as well as the action of drugs on proteins / peptides
- Recognize different families and different structures of receptors
- Understand signal transduction and its pharmacological control
- Know the contribution of polysaccharides and glycoconjugates in pharmaceutics
- Understand metabolic targeting
- Know the contribution of enzymes to the pathogenesis of diseases and the use of specific enzymatic inhibitors as drugs
- Know the importance of targeting nucleic acids to therapeutics

General Competences

By the end of this course the student will, furthermore, have developed the following skills (abilities):

- Ability to demonstrate knowledge and understanding of the essential facts, concepts, theories and applications related to The Biomacromolecules as Targets for Therapeutic Approaches
- Ability to apply this knowledge and understanding to solve problems related to The Biomacromolecules as Targets for Therapeutic Approaches of non-familiar nature
- Ability to apply this knowledge for understanding other biological processes
- Ability to adopt and apply methodology for solving non-familiar problems

- Study skill needed for continuous professional development
- Ability to interact with others in solving problems of chemical/biochemical or multidisciplinary nature

Generally, by the end of this course the student will have developed the following general abilities:

- *Search for, analysis and synthesis of data and information, with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*
- *Working in an interdisciplinary environment*

3. SYLLABUS

- Proteins and peptides (action of drugs on proteins / peptides, antibodies in pharmaceutical chemistry, proteins / peptides as drugs)
- Families and structures of cellular receptors, signal transduction and its pharmacological control, design of agonists and antagonists, specific signaling pathways as pharmacological targets
- Polysaccharides and glycoconjugates as drugs and metabolic targeting
- Enzymes [strategies for the targeting of enzyme activity, pharmaceutical uses of inhibitors (enzyme inhibitors of pathogenic organisms, insects, weeds, fungi and inhibitors of selected human enzymes), enzymes as drugs]
- Targeting nucleic acids to therapeutics (epigenetics, nucleic acid / nucleotide-related drugs)

4. TEACHING and LEARNING METHODS – EVALUATION

<table>
<tr><td>DELIVERY</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</td><td>Use of ICT (powerpoint) in teaching and in the communication with the student communication.</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>28</td></tr>
<tr><td>Final examination</td><td>3</td></tr>
<tr><td>Private study of the course material throughout the lecturing period.
Collaborative problem-solving work by the students working in teams of two, following the end of lecturing period.
Preparation for the final examination.</td><td>94</td></tr>
<tr><td>Course total
(25 work load for each ECTS credit)</td><td>125</td></tr>
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<tr><td>STUDENT PERFORMANCE</td><td>1. Following the end of the lecture period, oral examination of each student individually on the material of the given lectures by</td></tr>
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EVALUATION	4-member examination committee. The final grade is extracted from the individual grades of the 4 examiners. Greek grading scale: 1 to 10. Minimum passing grade: 5. Grades ≤ 3 correspond to ECTS grade F. Grade 4 corresponds to ECTS grade FX. For the passing grades, the following equivalence normally holds with the ECTS passing grades: 5 = E, 6 = D, 7 = C, 8 = B and ≥ 9 = A 2. Teaching and examination is delivered normally in Greek. Powerpoint slides are, however, in English. Instruction and examination may be given in English, if foreign students attend the course. 3. Students with writing problems can be examined orally at the same day and hour with the written examination.

5. ATTACHED BIBLIOGRAPHY

1. G.M. Cooper, R.E. Hausman. The Cell: A Molecular Approach; Published by Sinauer Associates, Inc.
2. J.M. Berg, J.L. Tymoczko, L. Stryer. Biochemistry; W. H. Freeman and Company.