**COURSE OUTLINE FOR "PHARMACOLOGY (MECHANISMS – TARGETS FOR PHARMACOLOGICAL INTERVENTION)"**

## 1. GENERAL

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| **SCHOOL** | NATURAL SCIENCES AND HEALTH SCIENCES | | |
| **ACADEMIC UNIT** | CHEMISTRY AND MEDICINE | | |
| **LEVEL OF STUDIES** | POSTGRADUATE (MSc) | | |
| **COURSE CODE** | PHA 218 | **SEMESTER** | SECOND |
| **COURSE TITLE** | PHARMACOLOGY (MECHANISMS – TARGETS FOR PHARMACOLOGICAL INTERVENTION) | | |
| **INDEPENDENT TEACHING ACTIVITIES** | | **WEEKLY TEACHING HOURS** | **CREDITS** |
| Lectures | | 2 | 5 |
| **COURSE TYPE** | Special Background<br>(Semi-optional course) | | |
| **PREREQUISITE COURSES:** | There are not prerequisite courses. It is however recommended that students should at least have basic knowledge Genetics and Molecular Biology. | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek. The powerpoint material of the course is in English. Teaching and examinations may be performed in English in case foreign students participate in the postgraduate program | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | Yes | | |

## 2. LEARNING OUTCOMES

**Learning outcomes**

*At the end of this course the MSc student should be able to:*

- Know and understand topics of clinical and molecular pharmacology.
- Understand the mechanisms that cause various diseases.
- Understand the objectives of pharmacological intervention in various diseases.

**General Competences**

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

- Ability to demonstrate knowledge and understanding of the essential data, concepts, theories and applications related to pharmacology (molecular & clinical) and the mechanisms governing various diseases.
- Ability to adopt and apply methodology to the solution of problems related to the subject of pharmacology.
- Study skills needed for continued professional development.
- Ability to understand the essential concepts and principles related to human diseases and ways of pharmacological intervention and treatment.
- Ability to interact with colleagues in other disciplines to solve interdisciplinary problems

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

To target the cause of a disease and intervene to address it.

*The MSc student has also acquired the basic skills in the following general competencies:*

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

## 3. SYLLABUS

The course focuses on the basic principles of Pharmacology, focusing on the mechanisms of various diseases and the pharmacological intervention to address them.

*In particular the following topics are included:*

- Receptor plasticity as a basis for designing new types of drugs. From the conventional to the modern pharmacology.
- From chemicals to biological drugs – Generic drugs.
- Ion channels, transporters, enzymes, DNA, cell wall and membranes as targets for pharmacological intervention.
- Immunopharmacological interventions in cancer.
- Side effects and drug safety - Pharmacovigilance.
- Bioequivalence studies, clinical trials and introduction of new drugs.
- Specific topics (multiple sclerosis, anticoagulants, hypolipidemic, iostatic, etc.).

## 4. TEACHING and LEARNING METHODS – EVALUATION

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| **DELIVERY** | Face to face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** | Use of ICT (powerpoint) in teaching<br>Use of ICT in the communication with the students |
| **TEACHING METHODS** | |

| ***Activity*** | ***Semester workload*** |
|---|---|
| Lectures | 28 |
| Final examination | 2 |
| Study the course material throughout the course.<br>Preparation of the presentation by groups of two students when the lectures are completed.<br>Preparation for final examination. | 95 |
| ***Course total***<br>***(25 work load for each ECTS credit)*** | ***125*** |

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| **STUDENT PERFORMANCE EVALUATION** | **1.** Upon completion of the lectures, each pair of students prepares a powerpoint presentation on a selected topic of the course subject. Following is a presentation and an oral examination of the work individually for each student and it is evaluated.<br>Greek grading scale: 1 to 10. Minimum passing grade: 5.<br>Grades ≤ 3 correspond to ECTS grade F.<br>Grade 4 corresponds to ECTS grade FX. |

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| | For the passing grades the following equivalence normally holds with the ECTS passing grades:<br>5 = E, 6 = D, 7 = C, 8 = B and ≥ 9 = A<br>**2.** Greek language is used. For foreign students (e.g. Erasmus students) it can be done in English.<br>**3.** Students with writing problems can be examined orally at the same day and hour with the written examination. |

## 5. RECOMMENDED LITERATURE

*- Suggested bibliography:*

**1.** Greek or foreign language books on Pharmacology, Clinical Pharmacology and Molecular Pharmacology.

**2.** Scientific literature related to course lectures.

*- Related academic sources and journals:*

**1.** Christodoulos S. Flordellis, "*The Plasticity of the 7TMR Signaling Machinery and the Search for Pharmacological Selectivity"*, Current Pharmaceutical Design, 2012, 18, 145-160.

**2.** Iason Kyriazis, John Ellul, Paraskevi Katsakiori, George Panayiotakopoulos and Christodoulos Flordellis, "*The Multiple Layers of Signaling Selectivity at Protease-Activated Receptors*", Current Pharmaceutical Design, 2012, 18, 161-174.