## DISCIPLINE RECORD/ COURSE / SEMINAR DESCRIPTION

### 1. Information about the program

| 1.1. UNIVERSITY: “GRIGORE T. POPA” UNIVERSITY OF MEDICINE AND PHARMACY OF IAŞI |
| 1.2. FACULTY: PHARMACY SCHOOL / DEPARTMENT: PHARMACEUTICAL SCIENCES I |
| 1.3. SUBJECT: PHARMACEUTICAL CHEMISTRY |
| 1.4. STUDY FIELD: PHARMACY |
| 1.5. STUDY CYCLE: UNDERGRADUATE |
| 1.6. STUDY PROGRAMME: IN ENGLISH |

### 2. Subject data

| 2.1. SUBJECT: PHARMACEUTICAL CHEMISTRY |
| 2.2. Module leader: Prof. Profire Lenuţa, PhD |
| 2.3. Seminar leader: Prof. Profire Lenuţa, PhD, Assist. Lupaşcu Florentina, PhD, Assist. Pânzariu Andreea, PhD student |
| 2.4. Year of study | IV |
| 2.5. Semester in which is taught | I/II |
| 2.6. Evaluation type | E1/E2 |
| 2.7. Subject status | Compulsory |

### 3. Duration of the course (hours per semester)

| 3.1. Number of hours / week | 6 (1<sup>st</sup> sem) | 2 (1<sup>st</sup> sem) |
| 3.2. Number of hours / week | 5 (2<sup>nd</sup> sem) | 2 (2<sup>nd</sup> sem) |
| 3.3. Seminar / lab | 4 (1<sup>st</sup> sem) | 3 (2<sup>nd</sup> sem) |
| 3.4. Total number of learning hours | 84 (1<sup>st</sup> sem) | 28 (1<sup>st</sup> sem) |
| 3.5. Total number of learning hours | 70 (2<sup>nd</sup> sem) | 28 (2<sup>nd</sup> sem) |
| 3.6. seminar / lab | 56 (1<sup>st</sup> sem) | 42 (2<sup>nd</sup> sem) |
| 3.7. Distribution of activities in the course (1<sup>st</sup> sem/2<sup>nd</sup> sem) | hours |
| Study based on the manual, printed course, bibliography and notes | 28/25 |
| Additional research in the library, on specialized e-platforms and field study | 5/5 |
| Preparation for seminars, practical courses, portfolios and essays | 5/- |
| Tutoring | 5/5 |
| Assessment | 23/20 |
| Other activities | - |
| 3.8. Number of hours of individual study | 43/35 |
| 3.9. Number of hours per semester | 150/125 |
| 3.10. Number of ECTS | 6/5 |

### 4. Previous Knowledge (if applicable)

- **4.1. course related**: Organic and inorganic chemistry, analytical chemistry, pharmacology.
- **4.2. skill related**: Chemistry and pharmacology knowledge, titration.

### 5. Requirements (if applicable)

- **5.1. course conditions**: Video projector.
- **5.2. seminar / laboratory conditions**: Laboratory glass-ware, burettes, reagents, volumetric solutions, technical and analytical balances.
6. Specific Skills Acquired

| Professional skills displayed by knowledge and skills | Design and manufacture of medicines.  
| Analysis and control of medicines.  
| Consultancy and expertise in the field of medicines. |
| Transversal skills (role skills, professional and personal skills) | Team work skills.  
| Using theoretical and practical knowledge to handle specific professional qualification problems.  
| Availability for continuous education, autonomy and liability. |

7. Course Objectives (confirmed by the grid of specific skills acquired)

| 7.1. General Objective | The complex study of pharmaceutical substance - active principle of the drug regarding common international name, chemical structure, synthesis methods, and chemical structure-biological activity relationships. |
| 7.2. Specific Objectives | The knowledge of physico-chemical and pharmaco-toxicological properties, therapeutic uses and pharmaceutical products, in the following classes: General Anaesthetics, Sedatives and Hypnotics, Anxiolytics (Tranquilizers), Antipsychotics (Neuroleptics), Antiepileptics, Anti-Parkinsonian Drugs, Antidepressants, Psychomotor Stimulants, Nootropics, Opioid Analgesics, Local Anaesthetics, Analgesic-Antipyretic and Nonsteroid Anti-Inflammatory drugs (1st sem.)/Pharmaceutical Substances Acting on Autonomic Nervous System: Sympathomimetics (Adrenergic drugs), Sympatholytics (Adrenolytic Drugs), Adrenergic Neural Blockers, Parasympathomimetics, Parasympatholytics; Pharmaceutical Substances acting on Cardiovascular System; Pharmaceutical Substances with Diuretic Action; Pharmaceutical Substances Acting on Blood, Histamine: Agonists and Antagonists; Pharmaceutical Substances acting on Respiratory System; Pharmaceutical Substances acting on Digestive system; Antidiabetics; Antihyperlipidemics; Radiodiagnostic Substances (2nd sem.). |

8. Contents

<table>
<thead>
<tr>
<th>8.1. Course</th>
<th>Teaching methods</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Anaesthetics: Inhalatory Anesthetics. Intravenous Anesthetics. Barbituric and Thiobarbituric Acid Derivatives. Other Anesthetics</td>
<td>Video projector</td>
<td>2 hours</td>
</tr>
<tr>
<td>Tranquilizers: Benzodiazepine Tranquilizers. Anxiolytics with an Azaspirodecanedione Structure. 1,3- Propandiol Derivatives. Diphenylmethane Derivatives</td>
<td>Video projector</td>
<td>2 hours</td>
</tr>
<tr>
<td>Anti-Parkinsonian Drugs: Anticholinergic Drugs. Dopamine-Receptor Agonists. Drugs Affecting Dopamine Metabolism</td>
<td>Video projector</td>
<td>2 hours</td>
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<tr>
<td>Lithium Derivatives</td>
<td>Video projector</td>
<td>2 hours</td>
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<tr>
<td>Psychomotor Stimulants: Methylxanthines, Phenylethylamine Derivatives. Nootropics: alpha-Pyrrolidones Derivatives</td>
<td>Video projector</td>
<td>2 hours</td>
</tr>
<tr>
<td>Local Anaesthetics: Benzoic Acid Esters. Para-Aminobenzoic Acid Esters. Amide-type Local Anaesthetics</td>
<td>Video projector</td>
<td>6 hours</td>
</tr>
<tr>
<td>Pharmaceutical Substances with diuretic action</td>
<td>Video projector</td>
<td>3 hours</td>
</tr>
<tr>
<td>Pharmaceutical Substances Acting on Respiratory System: Anticough Drugs. Expectorants. Mucolytics</td>
<td>Video projector</td>
<td>1 hour</td>
</tr>
<tr>
<td>Antidiabetics: Antidiabetic sulphonamides. Biguanidines. Other</td>
<td>Video projector</td>
<td>1 hour</td>
</tr>
</tbody>
</table>
antidiabetics. Aldose Reductase Inhibitors. Carboxylic Acids. Cyclic Imides. Alpha-Glucosidase Inhibitors

| Video projector | 1 hour |

**Bibliography**

### 8.2. Seminar / Practical lessons

<table>
<thead>
<tr>
<th>Teaching Methods</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Hypnotic and sedative substances class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Tranquillizers class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Neuroleptics class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Local anesthetics class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Analgesic-Antipyretic and Nonsteroid Anti-Inflammatory drugs class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Stimulants of CNS class</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances from Various Classes of Pharmaceutical Substances</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Musculo-Spasmodylitics</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances Acting on Digestive System</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Antiallergy drugs</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Pharmaceutical Substances with diuretic action</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Substances used in the treatment of Hypercholesterolemia and Dyslipidemia</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Radiodiagnostic Substances</td>
<td>teaching on blackboard, discourse</td>
</tr>
<tr>
<td>Synthesis and Analysis of Aminoacids</td>
<td>teaching on blackboard, discourse</td>
</tr>
</tbody>
</table>

**Bibliography**
9. The agreement between the course contents and the expectations of the representatives of the epistemic communities, professional associations and employers in the field related to the program

In Pharmaceutical chemistry, students acquire complex knowledge about active substances – from information about the synthesis and the analysis to information about their biological properties. This knowledge is essential to exercise the pharmacist profession either in pharmacy, pharmaceutical labs or in pharmaceutical industry.

10. Assessment

<table>
<thead>
<tr>
<th>Activity</th>
<th>10.1. Assessment criteria</th>
<th>10.2. Assessment methods</th>
<th>10.3. Percentage of the final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.4. Course</td>
<td>Answers in the theoretical exam.</td>
<td>Written examination</td>
<td>50%</td>
</tr>
<tr>
<td>10.5. Seminar / Practical lessons</td>
<td>Testing during the semester.</td>
<td>Discourse and test papers</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Answers and results in the practical exam.</td>
<td>Written examination</td>
<td>35%</td>
</tr>
</tbody>
</table>

Minimal standard of proficiency 5 is the lowest passing grade.

Date: 8.12.2014

Signature of Coordinator for Teaching Activities

Prof. Profire Lenuţa, PhD

Date of indorsement in the Council of the Department

Signature of The Department Director

Assoc. Prof. Gladiola Țântaru, PhD