

## **(Syllabus): INORGANIC PHARMACEUTICAL CHEMISTRY**

**Code number:**

20

**Cycle:**

Undergraduate

**Semester:**

3rd

**Course type**

	Background/General knowledge
<b>X</b>	Scientific area (pharmacy)

**Credit Units (ECTS):**

6

**Lectures (hours/week):**

2

**Tutorial (hours):**

-

**Laboratory work (hours):**

2

**Course Coordinator: Dimitra Hadjipavlou-Litina**

**Tutor:**

**Dimitra Hadjipavlou-Litina, Professor**

Room 408/B & 410, 4th floor Biology/Pharmacy building.

Collaboration with students: Every day 11-12.

Communication: e-mail (hadjipav@pharm.auth.gr)

**Assisting personnel:**

Dr. Antony Gavalas, RLI

**Aims of the course:** Understanding by the students of inorganic drug, including chemical properties and biological role as well as of elements (metals and metalloids) involved in its structure and synthesis. Aims comprise knowledge and skill (capacity) of synthesis, qualitative control, characterization, quantitative control of pharmaceutical preparations which

contain inorganic drugs, their mechanism of action at the molecular level as well as their use and side effects.

**Skills:** Familiarity with basic knowledge: a) biological activity of metals-metalloids b) biological activity of inorganic compounds of pharmaceutical interest, c) their interaction with biological targets and d) their characterization –qualitative/quantitative control.

**Teaching methods:**

Lectures and Laboratory work.

**Contents of the course:**

Inspection of elements in respect with Chemistry-Pharmacological/Toxicological activity, biological activity of metals-metalloids, inorganic compounds of pharmaceutical interest: synthesis/origin, quality/quantity control, properties, uses, side effects and their chemical explanation. The given knowledge contains inorganic drugs that are still in used. From a historical point of view a synopsis of inorganic drugs that have been withdrawn is presented. The drugs are listed as antipsychotics, antiseptics, antacids etc.

**Proposed Literature:**

1. Remingtons:Pharmaceutical Sciences 14 Ed.Mac.Publishing Co., Easton, 1970.
2. Roger's Inorganic Pharmaceutical Chemistry, 8<sup>th</sup> ed., by T.O.Soine and C.O.Wilson, Lea and Felinger, Filadelfia, 1967.
3. Bio-inorganic Chemistry R.W.Hay, editor Ellis Horwood (in Greek language by E. Μάνεση-Ζούπα & Δ. Πάπη). Editor Papazisis, 1992
4. Bioinorganic Chemistry: Inorganic Elements in the Chemistry and Life. An Introduction and Guide. W. Kaim & B. Schwderski. Editor Wiley, 1994
5. National Formulary, National Drug Organization 2007

**Educational activities:**

Lectures and laboratory work.

**Evaluation process and methods:** Exams in the end of semester.

Examination is based on some questions which should be answered according to the obtained knowledge during semester as well as to the ability to combine knowledge with information and the critical thought of the students.

Exams in the end of semester take place on date and hours as well as in auditoriums announced by the Department.

Duration of exams is 3 h.

During laboratory practice students present the composition of their results. At the end of laboratory practice students have a written examination. Success in laboratory practice (average of notebook and test should be 5 at least) is obliged for the participation in exams in the end of semester. The laboratory practice mark represents the 20% of the final mark.

### Use of TIC / Electronic distribution of the lectures:

#### Tutor:

Dimitra Hadjipavlou-Litina, professor

Lectures, notes, statements etc are presented in the corresponding place of the website of the School of Pharmacy [users.auth.gr/hadjipav](http://users.auth.gr/hadjipav).

#### Teaching:

α) Lectures. The lectures take place 1 hour twice per week Auditorium D12, in the building of the School of Natural Sciences.

Lecture	Title	Tutor
1	Introduction to Inorganic pharmaceutical Chemistry	D.Hadjipavlou-Litina
2-5	Principles Quality and quantity control	D.Hadjipavlou-Litina
6	antacids	D.Hadjipavlou-Litina
7	Compounds of magnesium	D.Hadjipavlou-Litina
8	Compounds of calcium	D.Hadjipavlou-Litina
9-11	Disinfectants	D.Hadjipavlou-Litina
12	Diagnostics	D.Hadjipavlou-Litina
13	Borium and compounds	D.Hadjipavlou-Litina
14-15	Purgatives	D.Hadjipavlou-Litina
16	Antipsychotics	D.Hadjipavlou-Litina
17-19	Sulfur. Halogens, fluoride	D.Hadjipavlou-Litina
19	Electrolytes	D.Hadjipavlou-Litina
20-21	Antiseptics	D.Hadjipavlou-Litina
18-19	Tungsten, Thallium, Cadmium, Cobalt	D.Hadjipavlou-Litina
23-24	Selenium, Vanadium, Nickel, Platinum	D.Hadjipavlou-Litina
25-26	Copper, Mercury, Zinc	D.Hadjipavlou-Litina

#### B) Laboratory

Laboratory	Title	Tutor
1-3	Preparation of boric acid and calcium phosphoricum bibasicum. Preparation of original solutions	Hadjipavlou-Litina, Gavalas
4-5	Quantitative determination of borax and	Hadjipavlou-

	boric acid	Litina, Gavalas
<b>6-8</b>	Quantitative determination of tincture iodine ( $I_2 + KI$ )	Hadjipavlou-Litina, Gavalas
<b>9</b>	Quantitative determination of ferrum sulfuricum and potassium permanganicum	Hadjipavlou-Litina, Gavalas
<b>10</b>	Quantitative determination of cuprum sulfuricum	Hadjipavlou-Litina, Gavalas
<b>11</b>	Quantitative determination of magnesium sulfuricum	Hadjipavlou-Litina, Gavalas
<b>12</b>	Quantitative determination of $KMnO_4$ by chromatometric method	Hadjipavlou-Litina, Gavalas
<b>13</b>	Quantitative determination of sodium sulfuricum	Hadjipavlou-Litina, Gavalas