Special Courses of Master Degree in Pharmaceutical Sciences

Pharmaceutical Analytical Chemistry Department

1-General Courses :(0600700) (12 cr. h)
2- Specialized Courses: (12 cr. h)

First Semester (4 cr. h)

No.	Course code	Courses	Credit hours	
			L	P
1	0607701	Bioanalytical Methods	2	--
2	0607702	Green Analytical Chemistry	2	--
Total			**4**	

Second Semester (8 cr. h)

No.	Course code	Courses	Credit hours	
			L	P
3	0607703	Advanced Electrochemical Methods of Analysis	2	--
4	0607704	Seminar	3	--
5		Elective Course	3	
Total			**8**	

Elective Courses

No	Course code	Courses	Credit hours	
			L	P
1	0607705	Advanced Spectroscopic Methods of Analysis	3	--
2	0602703	Applied Experimental Pharmacology	2	1*

*1 credit hour practical is 2 hours session weekly

Course Description of Master Degree in Pharmaceutical Sciences

Pharmaceutical Analytical Chemistry Department

First Semester (4 cr. h)

Course Name	Credit hours		Code No.
	L	P	
Bioanalytical Methods	2	--	0607701

Description: The course includes introduction to various methods used to analyze biomolecules such as proteomic, genomics and metabolomics. Topics may include enzymatic assays, immunoassays, biosensors and their specific selection (SELEX), electrophoresis (gel/capillary), DNA sequencing techniques, fluorescence imaging, surface plasmon resonance, surface enhanced Raman spectroscopy (SERS) and different chromatographic techniques.

- **Bioanalytical Chemistry**
- **Uppsala University – Swedan**

- Link: http://www.uu.se/en/admissions/master/selma/kursplan/?kpid=27257andtype=1

Course Name	Credit hours		Code No.
	L	P	
Green Analytical Chemistry	2	--	0607702

Description: The emerging field of green analytical chemistry is concerned with the development of analytical procedures that minimize consumption of hazardous reagents and solvents and maximize safety for operators and the environment. This Course of Green Analytical Chemistry provides a catalogue of tools for developing environmentally friendly analytical techniques including: green analytical chemistry approaches in sample preparation, green chromatography and capillary electrophoresis as a green alternative, green analytical atomic spectrometry and solid phase molecular spectroscopy, derivative techniques in molecular absorption, fluorimetry and liquid chromatography as tools for green analytical chemistry, greening electroanalytical methods, green bioanalytical chemistry, and green industrial analysis.

- **Green Analytical Chemistry**
- **Politechnika Gdanska University - Poland**

- Link: http://www.chem.pg.gda.pl/agrobiokap/images/stories/Promocja/green%20analytical%20chemistry_jacek%20namiesnik.pdf

Second semester (8 cr. h)

Course Name	Credit hours		Code No.
	L	P	
Advanced Electrochemical Methods of Analysis	2	--	0607703

Description: Electrochemical methods of analysis has gained great interest in the field of pharmaceutical- and bio-analytical fields, due to their simplicity, low operating cost, high sensitivity and speed of analysis. The course introduces the fundamentals of electrochemistry and commonly used electroanalytical methods including potentiometry, amperometry and voltammetry, as well as their applications in drug development and analysis. Electrochemical sensors including ion selective electrodes and with biosensors will also be covered and their applications in pharmaceutical and bio-analysis.

- **Electrochemical Methods and Advanced Analytical Electrochemistry**
- **University of Texas at Austin**
- **Link:**
  - https://www.cec.cm.utexas.edu/education

Elective Courses

Course Name	Credit hours		Code No.
	L	P	
Advanced Spectroscopic Methods of Analysis	3	--	0607705

Description: Spectrophotometry has gained great interest in the field of pharmaceutical and biological analysis, as it has the advantages of being simple, fast, cost effective technique for qualitative and quantitative (single and multicomponent) analysis. The course describes an advanced study for the basic principles, functional group derivatization instrumental design and applications of a variety of spectroscopic analytical techniques including molecular (UV-VIS) and atomic absorption spectroscopy, emission spectroscopy, IR and Raman spectroscopy.

- **Spectroscopic Methods for Drug Analysis**
- **The University of Dublin –Ireland**
  - Link: https://pharmacy.tcd.ie/postgraduate/msc_analysis.php