BACHELOR'S PROGRAMME

CHEMISTRY, MEDICAL CHEMISTRY, TECHNOLOGICAL BIOCHEMISTRY

2ND YEAR OF STUDY, 2ND SEMESTER

COURSE TITLE	**INSTRUMENTAL ANALYSIS II (ELECTROANALYTICAL METHODS)**
COURSE CODE	31010030050SL1112205
COURSE TYPE	full attendance/ tutorial
COURSE LEVEL	1st cycle (bachelor'sdegree)
YEAR OF STUDY, SEMESTER	2nd year of study,2nd semester
NUMBER OF ECTS CREDITS	4
NUMBER OF HOURS PER WEEK	3 (2 lecture hours + 1 practical applications hours)
NAME OF LECTURE HOLDER	Assoc. Prof. PhD Alin-Constantin DÎRŢU
NAME OF SEMINAR HOLDER	Assoc. Prof. PhD Alin-Constantin DÎRŢU
PREREQUISITES	General chemistry

A	**GENERAL AND COURSE-SPECIFIC COMPETENCES**
	Learning the principles of electroanalytical methods of analysis to form a solid theoretical foundation that allows students to identify and quantify major, minor/trace components from different matrices. Learning the basic principles of electrochemical methods in order to establish the relationship between the observed / measured property of a specific investigated system and analytic concentration or reaction volume.
B	**LEARNING OUTCOMES**
	evaluate fundamentals of electrochemistry evaluate electrodes and cells evaluate and discuss electrode potentials and cell thermodynamics evaluate potentiometric, conductometric, voltametric and amperometric methods
C	**LECTURE CONTENT**
	Electroanalytical methods. Electrode processes, electrochemical reactions, electrochemical cells, transport phenomena, current-potential curves. Potentiometric methods: electrodes, the electrode potential, types of electrodes, electrode characteristics, and their role in direct and indirect applications. Voltammetric methods. Classical polarography. Modern polarography. Amperometry. High and low frequency conductometry.
D	**RECOMMENDED READING FOR LECTURES**
	1. Harvey D. Modern analytical chemistry, Mac Graw Hill, 2000. 2. Skoog DA, West DM, Holler FJ, Crouch SR, Fundamentals of Analytical Chemistry, 9th Ed., Cengage Learning, Belmont, USA, 2014. 3. Harris DC. Quantitative Chemical Analysis, 6th Edition, W.H. Freeman and Company, New York, 2001.
E	**SEMINAR AND PRACTICAL APPLICATIONS CONTENT**

	Solving exercises and problems on the following topics: direct and indirect potentiometric methods, conductometric methods. Frontal and individual lab experiments on the qualitative and quantitative analysis of selected inorganic compounds appying: direct and indirect potentiometric methods, conductometric methods.
F	**RECOMMENDED READING FOR SEMINARS**
	1. Harvey D. Modern analytical chemistry, Mac Graw Hill, 2000. 2. Skoog DA, West DM, Holler FJ, Crouch SR, Fundamentals of Analytical Chemistry, 9th Ed., Cengage Learning, Belmont, USA, 2014. 3. Harris DC. Quantitative Chemical Analysis, 6th Edition, W.H. Freeman and Company, New York, 2001.
G	**EDUCATION STYLE**
LEARNING AND TEACHING METHODS	Lecture, demonstration, solving exercises, laboratory experiments
ASSESSMENT METHODS	Periodicallyevaluation + writtenexamination (50% score laboratory continue evaluation / 50% score course evaluation)
LANGUAGE OF INSTRUCTION	English