BACHELOR'S PROGRAMME

CHEMISTRY

3ST YEAR OF STUDY, 1ST SEMESTER

COURSE TITLE	**NUCLEAR CHEMISTRY**
COURSE CODE	31010030010SL1223108
COURSE TYPE	full attendance
COURSE LEVEL	1st cycle (bachelor'sdegree)
YEAR OF STUDY, SEMESTER	3styear of study,1stsemester
NUMBER OF ECTS CREDITS	5
NUMBER OF HOURS PER WEEK	4 (2lecture hours + 2 seminar hours)
NAME OF LECTURE HOLDER	Lecturer PhD MirelaGOANŢĂ
NAME OF SEMINAR HOLDER	Lecturer PhD MirelaGOANŢĂ
PREREQUISITES	Metal chemistry bloc "s" and "p", Transition metal chemistry

A	**GENERAL ANDCOURSE-SPECIFICCOMPETENCES**
	General competences: The student: → Can pass on relevant scientificknowledgebothwritten and oral → Can solveproblemsindividually or as an active member in a team **Course-specificcompetences**: The student: → Is able to define an duse nomenclature, units and properties of radiation andr adiochemistry → Can perform calculations in nuclear chemistry and utilize these in applied radiochemical sciences → Is able to assess radiation and radiation exposure from a radiation protection point of view
B	**LEARNINGOUTCOMES**
	• Can define radioactive decay processes and nuclear radiation • Knows the priciples of utilizing radioactivity applied to chemistry, chemical processes and adjacent field swhere chemistryis an integral part • Knows the principles of radiation hygiene and the interaction of radiation and matter • Can update him self/her self on current methods in nuclear chemistry
C	**LECTURE CONTENT**
	Radioactivity in Nature. Nuclear Radiation. Radioelements, Isotopes and Radionuclides. Physical Properties of Atomic Nuclei and elementary particles. . Measurement of nuclear radiation. Radioactive decay. Artificial Radioactivity. Successive transformations. Nuclear reactions. Nuclear fuel. Radioactive pollution. Uses of radioisotopes.
D	**RECOMMENDEDREADING FOR LECTURES**

	1. K. H. Lieser, „Einfürung in die Kernchemie”, Wiley, 2013 2. Werner Stolz, „Radioaktivität: Grundlagen-Messungen-Anwendungen”, Teubner, 2005
E	**SEMINAR CONTENT**
	Radiation protection and nuclear safety Calculation of radiation doses and thickness of protective screens. Determination of the absorption coefficient of γ radiation by Al, Fe, Pb. Determination of the half-life of a long-lived isotope. Nuclear reactions.
F	**RECOMMENDEDREADING FOR SEMINARS**
	Alexandru Cecal, Karin Popa*, Lucrări practice de radiochimie*, Ed. Univ. “Alexandru Ioan Cuza” Iaşi, 2001 Set of applications corresponding to the seminar topics.
G	**EDUCATION STYLE**
LEARNINGANDTEACHINGMETHODS	Lectures, exercises and visits related to radioactivity will be provided
ASSESSMENTMETHODS	The exam contains theoretical questions to discuss and exercises to solve. Final exam: 60% Homework: 10% Quizzes: 30%
LANGUAGE OF INSTRUCTION	English/Romanian