BACHELOR'S PROGRAMME
MEDICINAL CHEMISTRY
1ST YEAR OF STUDY, 2ND SEMESTER

COURSE TITLE	**CHEMICAL THERMODYNAMICS**
COURSE CODE	31010030010SL1111203
COURSE TYPE	full attendance
COURSE LEVEL	1st cycle (bachelor'sdegree)
YEAR OF STUDY, SEMESTER	1styear of study,2ndsemester
NUMBER OF ECTS CREDITS	6
NUMBER OF HOURS PER WEEK	6 (3lecture hours + 3 seminar/laboratory hours)
NAME OF LECTURE HOLDER	Assoc. Prof. PhD Mircea-Ondin APOSTU
NAME OF SEMINAR HOLDER	MIRCEA-ODIN, APOSTU
PREREQUISITES	English (B level), General Chemistry,Basic InorganicChemistry, Mathematics

A	**GENERAL AND COURSE-SPECIFIC COMPETENCES**
	General competences: → Analysis and control of chemical processes. → Capacity for analytical and critical thinking. → Capacity for planning, time management and self-motivation. → Act with orientation to quality. **Course-specific competences**: → Interdisciplinary approach to the analysisof chemical processes. → Understand the utility of thermodynamics in the case of chemical transformations.
B	**LEARNING OUTCOMES**
	→ Provide to students a sufficient background for the estimation of the thermodynamics characteristics of a wide range of chemical systems. → Using specific thermodynamics quantities the students will be able to specify the spontaneity degree of a process. → Study of chemical equilibrium and of the factors that affect the position of equilibrium. → Calculation of the equilibrium composition.
C	**LECTURE CONTENT**
	Gaseous state. State variables. The zero law of thermodynamics. The first law of thermodynamics (conservation of energy principle). Thermochemistry. The second law of thermodynamics (the entropy principle). Thermodynamic potentials. Chemical potentials. Phase equilibrium. Solution thermodynamics. Chemical equilibrium.
D	**RECOMMENDED READING FOR LECTURES**
	1. I. Prigogine, R. Defay, Chemical Thermodynamics, Longmans, 1954 2. S. I. Sandler, Chemical and Engineering Thermodynamics, John Wiley & Sons, 1989 3. E. N. Yeremin, Fundamentals of Chemical Thermodynamics, Mir Publishers, Moscow, 1986 4. P. W. Atkins, Atkins' Physical Chemistry, (any edition).
E	**SEMINAR/LABORATORY CONTENT**
	Enthalpy of neutralization. Enthalpy of formation.Partial molar volume. Nernst distribution law. Liquid-vapor equilibrium for pure component.Ebulliometry. Perfect and real gases. Partial molar

	properties. State functions. Physical transformation of perfect gases. Enthalpy of reaction. Calculation of entropy change. Calculation of Gibbs energy change. Clausius-Clapeyron and Raoult equations. Gibbs phase rule.Chemical equilibrium.
F	**RECOMMENDED READING FOR SEMINARS**
	1. P. W. Atkins, Atkins' Physical Chemistry, (any edition).
G	**EDUCATION STYLE**
LEARNING AND TEACHING METHODS	Presentation, Demonstration, Discussion
ASSESSMENT METHODS	Practical reports (based on lab results), Essays,Traditional testing
LANGUAGE OF INSTRUCTION	Romanian/English