UCLouvain

lchm1352

2021

Physical methods of chemistry

3.00 credits	0 h + 60.0 h	Q2

Teacher(s)	Leyssens Tom ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	The course contains a practical and theoretical formation to experimental methods of physical chemistry. The aspects treated are mainly : • Thermodynamics in gas or condensed state (thermochemistry, phase equilibrium, chemical equilibrium, properties of solutions, ...) • Kinetics of chemical reactions (determination of reaction orders, rate constants, ...) • Transport properties (kinetic theory of gases, viscosity of gases and liquids, electric field effects, ...) • Electrochemistry (conductivity, ...) • Molecular properties (spectroscopies: IR, UV, ..., dielectric properties, ...).
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 The objectives of the course are to integrate and analyze in a critical way the acquisitions and treatments of experimental data necessary to study a chemical problem. Emphasis is put on the polyvalent character of techniques and methods used.
Evaluation methods	• 6/5 reports • 1 written exam (multiple choice) • laboratory behavior rating
Teaching methods	• Laboratory 8h30-5h30 • Careful handling (products, ...) • Gown and glasses are mandatory • No smoking or eating in the lab • Clean everything at the end (the end = after you have interpreted your results) • Syringes vs. pipettes • Help your classmates in the morning / interactive learning by explanation
Content	• Physical chemistry = why a change (chemical/physical). • Different from other labs / we aim to understand the concepts you have seen. • Data collected in the lab are to be interpreted to understand the physical/chemical phenomena. In an ideal reality, the approach would be : • Problem • Identify the questions it raises • Develop relevant experiments in view of these questions • Carry out these experiments and collect data • Interpret the data • Formulate answers/answers to the initial questions • Review the initial problem
Inline resources	Explained labs available on moodle.

Other infos	*Interpretation of the results :* • On computer • End of day report or sheet with results (by mail) • Tools learned in statistics class (confidence intervals/prediction, CS, regression, ...) *Report :* • 1 per group/ heading: Names; Group nr, Dte, Session nr, Title) • Report writing is important and crucial in these labs. • Learning: COMMUNICATE YOUR RESULTS • 4 parts (principle and goals; measured quantities, experimental results, interpretation !!!!!!!). • Comparison with literature (database, NIST, Handbook of Physics, ...). Mention where you find these data. • Value does not have to be exact, but explain well why, ... Reflect on your results. • No lab notebook to hand in (notebook = personal) • Pay attention to the units • 4/5 pages
Faculty or entity in charge	SC

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Chemistry	CHIM1BA	3	LCHM1111 AND LCHM1211 AND LCHM1252	