

4.0 credits

30.0 h + 30.0 h

1q

Teacher(s) :	Muccioli Giulio (coordinator) ; Gallez Bernard ;
Language :	Français
Place of the course	Bruxelles Woluwe
Inline resources:	Supportive materials: An adapted copy of the teacher's material will be made available to the students through the iCampus platform.
Prerequisites :	Pre-requisite: general & mp; mineral chemistry (e.g. WMD1105) and organic chemistry (e.g. WMD1106)
Main themes :	Instrumental chemistry (for biomedical students) will go over (i) the main separation techniques and (ii) the techniques allowing the detection and quantification of analytes. Additional techniques (potentiometry, immune-assays, ') will also be discussed.
Aims :	<p>At the end of the course, the student will understand the main instrumental techniques discussed during the activities (classes and practical exercises).</p> <p>More specifically, the student</p> <ul style="list-style-type: none"> - will be able to explain the physicochemical principles that allow the functioning of a given analytical technique - will be able to explain how the different techniques addressed during the lessons work - will be able to cite and explain the main parameters that can be optimized for a given analytical method - will be able to propose, on a rational basis, the techniques that can answer to an analytical problem in the field of biomedical sciences - will be able to solve analytical chemistry exercises/problems similar to those solved during the seminars/practical exercises - will have acquired the rigor required for the analytical sciences (as well as for the biomedical sciences), in his answers to the exercises, in his behavior in the lab, in his writing of reports, <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Evaluation methods :	The evaluation will be based on written exam (theory + problems) as well as on the practical exercises (i.e. labs).
Content :	<p>The lessons give an overview of the main instrumental techniques that could be used in a biomedical setting. These include (but are not limited to) spectroscopic techniques such as UV-Vis absorption, molecular fluorescence and atomic spectroscopy. Mass spectrometry is also discussed. The separation techniques such as liquid and gas chromatography (as well as electrophoresis) are presented. Electrochemical techniques, mainly potentiometry, immuno-assays, and radionuclide-using techniques are also discussed.</p> <p>The seminars allow the students to solve exercises and problems related to instrumental analysis. During these seminars, the notions of pH is revisited (e.g. through the theoretical preparations of buffers), and chromatograms are discussed (determination of resolution, number of theoretical plates,').</p> <p>The practical exercises (labs) allow the students to prepare buffers, to quantify proteins using UV-visible spectroscopy, to analyze plasmids by electrophoresis, and to separate analytes by liquid chromatography.</p>
Other infos :	Instrumental chemistry (for biomedical students) will go over (i) the main separation techniques and (ii) the techniques allowing the detection and quantification of analytes. Additional techniques (potentiometry, immune-assays, ') will also be discussed.
Cycle and year of study :	> Bachelor in Biomedicine
Faculty or entity in charge:	SBIM