


In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

4 credits

30.0 h + 30.0 h

Q1

Teacher(s)	Muccioli Giulio ;
Language :	French
Place of the course	Bruxelles Woluwe
Prerequisites	Pre-requisite: general & mineral chemistry (e.g. WMD1105) and organic chemistry (e.g. WMD1106) <i>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.</i>
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 <p>1 - will be able to cite and explain the main parameters that can be optimized for a given analytical method</p> <ul style="list-style-type: none"> - 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>-----</p> <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	Due to the COVID-19 crisis, the information in this section is particularly likely to change. Written exam with theory and exercises. For the 1st evaluation (January), 10% of the overall mark corresponds to the practical activities mark (TP).
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, and to separate and quantify molecules by liquid chromatography.</p>
Inline resources	An adapted version of the material presented during the lessons is available on the "moodle" platform. The materials for the practical part of the activity is also available on the "moodle" platform.
Faculty or entity in charge	SBIM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Biomedicine	SBIM1BA	4	WSBIM1001 AND WMD1105 AND WMD1106	
Master [120] in Biomedicine	SBIM2M	4		