

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 + 20.0 h

Q2

Teacher(s)	Hermans Sophie ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	<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	
Aims	<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>
Evaluation methods	Due to the COVID-19 crisis, the information in this section is particularly likely to change. oral exam with a written preparation. It includes two theoretical questions: one with and one without a written preparation (15 points). The practical part is examined by the engineer, Dr. Koen Robeyns, and is evaluated with a maximum of 5 points. One more point students can get for the creative home work (the task is given).
Teaching methods	Due to the COVID-19 crisis, the information in this section is particularly likely to change. The course is taught with the use of PowerPoint slides, available at Moodle. The lecture course also includes demonstration software and the use of interactive material. Exercises are provided to facilitate the understanding.
Content	<p>Topics covered:</p> <ul style="list-style-type: none"> - Symmetry Elements - Crystal lattice - Point Groups - Space groups - Use of the International Tables for Crystallography - Principles of diffraction, reciprocal space - Intensity diffracted by a crystal - Single-crystal diffraction, powder diffraction - Experimental methods and instruments - Information obtained from the diffraction - Introduction to structural chemistry, contribution of crystallography to chemistry knowledge <p>Exercises:</p> <ol style="list-style-type: none"> 1. Point groups 2. Lattice. Planar groups. Glide plane 3. Space groups 4. Practical exercises in the laboratory: single crystal diffraction, powder diffraction 5. Description and comparison of crystal structures. Structure types
Inline resources	http://symmetry.otterbein.edu/ - interactive guide to molecular symmetry http://escher.epfl.ch/mobile/ - crystallography on a mobile phone, 2D periodic groups http://nanocrystallography.research.pdx.edu/index.py/links - collection of useful links http://escher.epfl.ch/eCrystallography/ - electronic crystallography course
Bibliography	<ul style="list-style-type: none"> • Colin N. Banwell, Elaine M. McCash, "Fundamentals of Molecular Spectroscopy" fourth edition, McGraw-Hill Book Company, 1994. • Laurence M. Harwood, Timothy D. W. Claridge, "Introduction to Organic Spectroscopy", Oxford Chemistry Primers n°43, Oxford University Press, 1997. • John M. Brown, "Molecular Spectroscopy", Oxford Chemistry Primers n°55, Oxford University Press, 1998. • Simon Duckett, Bruce Gilbert, "Foundations of Spectroscopy", Oxford Chemistry Primers n°78, Oxford University Press, 2000.

Other infos	<p>Skills to be acquired:</p> <ul style="list-style-type: none"> - understanding the symmetry and in particular of the molecular symmetry - understanding the foundations of modern crystallographic analysis and results they deliver
Faculty or entity in charge	CHIM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Chemistry	CHIM2M	4		
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4		
Master [60] in Chemistry	CHIM2M1	4		
Bachelor in Chemistry	CHIM1BA	4	LCHM1111 AND LPHY1101 AND LPHY1102	
Minor in Chemistry	LCHIM100I	4		