




4 credits

30.0 h + 20.0 h

Q2

Teacher(s)	Hermans Sophie ;
Language :	French
Place of the course	Louvain-la-Neuve
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	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	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	<p>http://symmetry.otterbein.edu/ - interactive guide to molecular symmetry</p> <p>http://escher.epfl.ch/mobile/ - crystallography on a mobile phone, 2D periodic groups</p> <p>http://nanocrystallography.research.pdx.edu/index.py/links - collection of useful links</p> <p>http://escher.epfl.ch/eCrystallography/ - electronic crystallography course</p>
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 Biochemistry and Molecular and Cell Biology	BBMC2M	4		
Bachelor in Chemistry	CHIM1BA	4		
Master [60] in Biology	BIOL2M1	4		
Minor in Chemistry	LCHIM100I	4		