UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
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Module name:	Crystallochemistry
Module level, if applicable:	Undergraduate
Code:	KMA6210
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6th
Module coordinator:	Prof. A. K. Prodjosantoso, Ph.D.
Lecturer(s):	Prof. Dr. Hari Sutrisno, M.Si.
Language:	Bahasa Indonesia and English
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 structured activities and 120 individual study per week
Workload:	Total workload of the activity is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	-
Course Outcomes	After taking this course, the students have ability to: CO1. Demonstrate knowledge of advanced theories and methods of chemistry CO2. Demonstrate proficiency in analyzing, applying, and solving engineering problems using the acquired chemical methods CO3. Demonstrate the problem solving ability in understand, extract and analyze engineering problems and reorganize the knowledge in chemistry forms for specific purposes CO4. Ability to convey ideas on chemistry knowledge clearly and effectively in both written and spoken forms. In addition, ability to work collaboratively as part of a team undertaking a range of different team roles CO5. Demonstrate the awareness of contemporary issues in Inorganic chemistry and the ability to respond the challenges CO6. Ability to pursue independent study and demonstrate the awareness for lifelong learning and professional development
Content:	Crystallochemistry courses are courses for students of Bachelor of Education in Chemistry with descriptions including: chemical structure description, symmetry and molecular groups, chemical bonds and lattice energy, molecular structures 1(compounds of the main group

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<tr><td></td><td>elements) and 2 (transition metal compounds), crystal gratings, symmetry and groups crystals, X-ray diffraction instruments and determination of simple crystal structures. This course aims to enable students to understand the structure and grid contained in molecular compounds 1 and 2.</td></tr>
<tr><td>Study / exam achievements:</td><td>The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td rowspan="5">1</td><td rowspan="5">CO1, CO2, CO3, CO4, CO5, CO6</td><td>The independent task of writing and/ or listening skills</td><td>Assignment</td><td>15%</td></tr>
<tr><td>Structured tasks are reading and/ or writing skills</td><td>Assignment</td><td>15%</td></tr>
<tr><td>Speaking ability and presentation skills journal analysis (Skills)</td><td>Speaking ability</td><td>10%</td></tr>
<tr><td>Mid-term exam</td><td>Written test</td><td>30%</td></tr>
<tr><td>Final exam</td><td>Written test</td><td>30%</td></tr>
<tr><td colspan="3"></td><td>Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Forms of media:</td><td>Board, LCD Projector, handouts, PPT slides, and stationaries</td></tr>
<tr><td>Reference:</td><td>A. Anthony Kelly, Kevin M. Knowles,2020, Crystallography and Crystal Defects, 3rd ed., Wiley
B. Christopher Hammond, 2015, The Basics of Crystallography and Diffraction, 4rd ed., Oxford University Press
C. E. S. Ameh, 2019, A review of basic crystallography and x-ray diffraction applications, Int. J. Adv. Manuf. Technol., 105, 3289–3302
D. Jesche A, Fix M, Kreyssig A, Meier WR, Canfield PC (2018) X-ray diffraction on large single crystals using a powder diffractometer. Phil Magaz 96(20):1–9
E. Muller, U., (2006). Inorganic Structural Chemistry, second edition. West Sussex: John Wiley & Sons Ltd
F. Huheey, J. E., Keiter, E. A. & Keiter, R. L. (1993). Inorganic Chemistry: Principle of Structure and Reactivity. New York: Harper Collins College Publisher.
G. Li, W. K., Zhou, G. D. & Wai Mak, T. C. (2008). Advanced Structural Inorganic Chemistry. New York: Oxford Science Publication
H. Miessler, G. L. & Tarr, D. A. (2009). Inorganic Chemistry, third edition. New Delhi: Pearson Education.
I. West, A. R. (1989). Solid State Chemistry and Its Applications. Singapore: John Wiley & Sons Ltd.</td></tr>
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PLO and CO mapping

CO	PLO									
	Attitude	Generic Skills		Knowledge				Specific Skills		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1							√			
CO2									√	
CO3									√	
CO4							√			
CO5					√					
CO6					√					