

Module Description

MPK 2205 Symmetry and Group Theory

Module Name	Symmetry and Group Theory
Module level, if applicable	Undergraduate Program
Code, if applicable	MPK 2205
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	3 rd Semester
Module coordinator(s):	Imelda H. Silalahi, S.Si, M.Si, Ph.D.
Lecturer	Dr. Anis Shofiyani, S.Si., M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory Courses for the undergraduate programme in Chemistry
Type of teaching, contact hours	Decide teaching/training components for each course outcome Theory/face to face lecture (for understanding) : 12 lecture meeting Problem : 2 Assignments : 2
Workload	Total workload: 1 x 2.83 hours = 2.83 hours per week. Contact hours (lecture): 1 x 0.83 hours = 0,83 hours per week Individual activity, including examination preparation, specified in hours: 1 x 1 hour = 1 hours per week Structured activity: 1 x 1 hour = 1 hours per week Mid and final-test: 2 x (1 x 0.83) hours = 1.66 hours 14 weeks per semester plus 2 times examination (mid and final test) 41.28 total hours per semester
Credit points	1 (1.67 ECTS)
Requirements according to the examination regulations	Registered in this course Required 75 % attendance in this course
Learning goals/competencies:	Intended Learning Outcomes (ILO) After taking this course, students will be able to: 1. LO-1

	2. LO-3												
Module objectives	1. Students are able to utilize symmetry and point groups of molecules to estimate the polarity and chirality of a molecule and to estimate molecular orbitals and estimate the vibrational modes of molecules that are active in IR and Raman spectroscopy.												
Content:	<ol style="list-style-type: none"> Symmetry and Elements of Symmetry. Point group. Applications of Symmetry and Point Groups in Chirality and Polarity. Group theory Applications of Group Theory and Symmetry in Molecular Orbitals. Applications of Group Theory and Symmetry in Raman and Infrared Spectroscopy. 												
Attribute Soft skill:	Critical thinking, Discipline, teamwork skills, responsibility, logical thinking, academic communication skills (presentation).												
Recommended prerequisites	-												
Study and examination requirements and forms of examination	<p>Students are considered to be competent and pass if they get at least 50% of the maximum final grade. The final grade (NA) is calculated based on the following:</p> <table border="1"> <thead> <tr> <th>Assessment Components</th> <th>Percentage Contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td>10%</td> </tr> <tr> <td>Assignment</td> <td>20%</td> </tr> <tr> <td>Mid-semester test</td> <td>35 %</td> </tr> <tr> <td>Final semester test</td> <td>35%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </tbody> </table> <p>Essay questions, take home assignment</p>	Assessment Components	Percentage Contribution	Participation	10%	Assignment	20%	Mid-semester test	35 %	Final semester test	35%	Total	100%
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Final semester test	35%												
Total	100%												
Learning Methods	Case-Based Teaching Method												
Media employed	White board; power point presentation; and e-learning system												
Reading list	<ol style="list-style-type: none"> Atkins, P., Overton, T., Rourke, J., Weller, M., Armstrong, F., 2009, Shriver and Atkins' Inorganic Chemistry, 5th edition, OUP,Oxford, Oxford. 												

	<ol style="list-style-type: none"><li data-bbox="630 197 1421 317">2. Huheey, J.E., Keiter, E.A., and Keiter, R.L., 1993, Inorganic Chemistry Principles of Structure and Reactivity, 4th ed., HarperCollins College Publishers.<li data-bbox="630 331 1421 451">3. Miessler, G.L., Fischer, P.J., Tarr, D.A., 2014, Inorganic Chemistry, 5th edition, Pearson Education, Inc., New Jersey.<li data-bbox="630 466 1421 567">4. Kieran C. Molloy, Group Theory for Chemists, second edition, Woodhead Publishing, Oxford.
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