



**UNIVERSITAS NEGERI YOGYAKARTA**  
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
 DEPARTMENT OF CHEMISTRY  
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**Bachelor of Science in Chemistry**

**MODULE HANDBOOK**

Module name:	Solid State of Inorganic Chemistry												
Module level, if applicable:	Undergraduate												
Code:	KMA 6223												
Sub-heading, if applicable:	-												
Classes, if applicable:	-												
Semester:	7 <sup>th</sup>												
Module coordinator:	Prof. AK. Prodjosantoso, Ph.D												
Lecturer(s):	Prof. Dr. Hari Sutrisno, M.Si												
Language:	Bahasa Indonesia and English												
Classification within the curriculum:	Elective 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 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):	General Chemistry												
Course Outcomes	<p>After taking this course, the students are expected to be able to:</p> <table border="1" style="width: 100%;"> <tr> <td>CO1</td> <td>Demonstrate an awareness of responsible and ethical conducts as well integrity in the context of their profession and obligations to society</td> </tr> <tr> <td>CO2</td> <td>Demonstrate proficiency in analyzing, applying, and solving engineering problems using the acquired chemical methods.</td> </tr> <tr> <td>CO3</td> <td>Ability to convey ideas on chemistry knowledge clearly and effectively in both written and spoken forms.</td> </tr> <tr> <td>CO4</td> <td>Demonstrate the awareness of contemporary issues in solid state chemistry and the ability to respond the challenges</td> </tr> <tr> <td>CO5</td> <td>Ability to work collaboratively as part of a team undertaking a range of different team roles</td> </tr> <tr> <td>CO6</td> <td>Ability to pursue independent study and demonstrate the awareness for lifelong learning and professional development</td> </tr> </table>	CO1	Demonstrate an awareness of responsible and ethical conducts as well integrity in the context of their profession and obligations to society	CO2	Demonstrate proficiency in analyzing, applying, and solving engineering problems using the acquired chemical methods.	CO3	Ability to convey ideas on chemistry knowledge clearly and effectively in both written and spoken forms.	CO4	Demonstrate the awareness of contemporary issues in solid state chemistry and the ability to respond the challenges	CO5	Ability to work collaboratively as part of a team undertaking a range of different team roles	CO6	Ability to pursue independent study and demonstrate the awareness for lifelong learning and professional development
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Content:	Courses of Solid Sate Inorganic Chemistry are courses for students of Bachelor of Education in Chemistry with descriptions including: description of solid state chemistry, single crystal and polycrystalline, preparation of single crystal, synthesis and characterization of single crystals,												

	<p>physical characterization of solid material, solid solution, and crystal defect.</p> <p>Subjects Include:</p> <ol style="list-style-type: none"> <li>1. Description of Solid State Chemistry</li> <li>2. Single Crystal and Polycrystalline</li> <li>3. Preparation of Single Crystal</li> <li>4. Synthesis and Characterization of Single Crystals</li> <li>5. Physical Characterization of Solid Material</li> <li>6. Solid Solution</li> <li>7. Crystal Defect</li> </ol>															
Study / exam achievements:	<p>Attitude assessment is carried out at each meeting by observation and/or self-assessment techniques using the assumption that basically every student has a good attitude. The student is marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude.</p> <p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1, CO2, CO3, CO4, CO5, CO6.</td> <td>a. Participation b. Assignments c. Mid-term exam d. Final Exam e. Lab Work</td> <td>Presentation / written test</td> <td>10% 20% 20% 20% 30%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, CO4, CO5, CO6.	a. Participation b. Assignments c. Mid-term exam d. Final Exam e. Lab Work	Presentation / written test	10% 20% 20% 20% 30%	Total				100%
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Forms of media:	Board, LCD Projector, Laptop/Computer, Tools and Chemicals for demonstration															
References:	<ol style="list-style-type: none"> <li>1. Richard Dronskowski, Shinichi Kikkawa, Andreas Stein, 2017, Handbook of Solid State Chemistry, 1-6, Wiley-VCH.</li> <li>2. Arnaud Valour et al., 2016, Preparation of nitrogen doped zinc oxide nanoparticles and thin films by colloidal route and low temperature nitridation process, <i>Solid State Sci.</i>, 54, 30-36.</li> <li>3. S.Jacq et al., 2016, Deposition and dielectric characterization of strontium and tantalum-based oxide and oxynitride perovskite thin films, <i>Solid State Sci.</i>, 54, 22-29.</li> <li>4. West, A. R. 1989. <i>Solid State Chemistry and Its Applications</i>. Singapore: John Wiley &amp; Sons Ltd.</li> <li>5. Muller, U., 2006. <i>Inorganic Structural Chemistry, second edition</i>. West Sussex: John Wiley &amp; Sons Ltd</li> </ol>															

## PLO and CO mapping

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