

## MODULE HANDBOOK

Module Name	Solid State Chemistry							
Module level	Bachelor							
Abbreviation, if applicable	3074112073							
Sub-heading, if applicable	-							
Course included in the module, if applicable	-							
Semester/term	6 <sup>th</sup> / Third Year							
Module coordinator(s)	Samik, S.Si., M.Si.							
Lecturer(s)	Prof. Dr. Harun Nasrudin, M.S. Nur Hayati, S.Si., M.Si.							
Language	Indonesian							
Classification within the curriculum	Elective Course							
Teaching format/class hours per week during the semester:	2 hours lecturers (50 min per hours)							
Workload:	2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 79,33 total hours per semester ~ 3.18 ECTS**							
Credit points:	2 CU x 1.59 = 3.18 ECTS							
Prerequisites course(s):	Thermodynamics of chemistry							
Targeted learning outcomes:	<ol style="list-style-type: none"> <li>1. Able to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and technology related to solid-state chemistry.</li> <li>2. Able to produce appropriate conclusions based on the results of identification, analysis, and synthesis of chemicals that have been carried out.</li> <li>3. Mastering theoretical concepts about crystal structure, types of crystals, solids analysis techniques, properties of solids, crystal defects, synthesis, and utilization of solid materials.</li> <li>4. Have a responsible attitude by applying preparative methods and characteristics of inorganic solids, properties and structures of solids, and solid solutions.</li> </ol>							
Content:	A study of solids, crystal structures, types of crystals, solids analysis techniques, properties of solids, crystal defects, synthesis, and utilization of solid materials. This study was conducted through lectures, discussions, review of journal articles and presentations.							
Study / exam achievements:	<p>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Assessment Components</th> <th style="text-align: center;">Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Participation</td> <td style="text-align: center;">20%</td> </tr> <tr> <td style="text-align: center;">Assignment</td> <td style="text-align: center;">30%</td> </tr> </tbody> </table>		Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%
Assessment Components	Percentage of contribution							
Participation	20%							
Assignment	30%							

	Mid-semester test	20%
	Final semester test	30%
Media:	Computer, LCD, White board, internet	
Learning Methods	Lectures, individuals' assignment, group assignment, discussion, and presentation	
Literature:	<ol style="list-style-type: none"> <li>1. Samik, Nasrudin, H., &amp; Setiarso, P. (2018). <i>Kimia Zat Padat</i>. Surabaya: UNESA University Press</li> <li>2. Askeland, D.R., &amp; Fulay, P.P. (2009). <i>Essentials of Materials Science and Engineering</i>. Second Edition. Canada: Cengage Learning</li> <li>3. Bahl, A., Bahl, B.S., &amp; Tuli, G.D. (2002). <i>Essential of Physical Chemistry</i>. New Delhi: S.Chand and Company Ltd.</li> <li>4. Levine, Ira. (2009). <i>Physical Chemistry</i>. Sixth Edition. New York: McGraw-Hill</li> <li>5. Ropp, R.C., &amp; Warren. (2003). <i>Solid-state Chemistry</i>. Amsterdam: Elsevier Science</li> <li>6. Rodgers, G.E. (2012). <i>Descriptive Inorganic, Coordination, and Solid-State Chemistry</i>. Third Edition. Canada: Brooks/Cole, Cengage Learning</li> <li>7. Smart, L.E., &amp; Moore, E.A. (2005). <i>Solid-state Chemistry An Introduction</i>. Third Edition. Boca Raton London: Taylor &amp; Francis Group.</li> <li>8. West, A.R. (1984). <i>Solid-state Chemistry and Its Applications</i>. New Delhi: John Wiley &amp; Sons Ltd.</li> </ol>	
Notes:	<p>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. The Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.</p> <p>**1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019</p>	