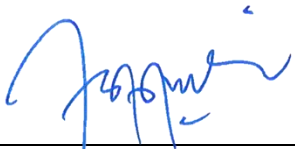
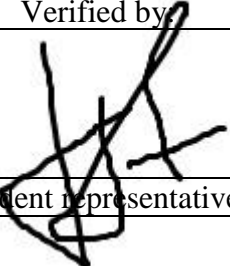





Faculty of Natural Sciences and Mathematics
Chemistry Department
Chemistry Education Study Program

Module name		Chemical bonding		
Module level, if applicable		2 nd Year		
Code, if applicable		SPK – 315		
Semester(s) in which the module is taught		3 rd semester		
Person responsible for the module		Prof. Dr. Is Fatimah		
Lecturer		Prof. Dr. Is Fatimah Imam Sahroni, M.Sc.		
Language		Indonesia		
Relation to curriculum		<i>Compulsory</i>		
Teaching methods	Class size	Forms of active participation	Workload 91 hours	
Class discussion	50-60	Discussion	Lecture: 100 (min) x 16 (meeting)	27 hours
			Assignment: 120 (min) x 16 (week)	32 hours
			Independent study: 120 (min) x 16 (week)	32 hours
ECTS credit		3.25		
Credit points		2 SCU		
Requirements according to the examination regulations		Minimum attendance at lectures is 75% (according to UII regulation)		
Recommended prerequisites		Physical chemistry		
Related course		Physical chemistry, Coordination chemistry		
Module objectives/intended learning outcomes		<p>On successful completion of the course students should be able to:</p> <ol style="list-style-type: none"> 1. Explain the concept of atoms and atomic orbitals 2. Explain the concepts of valence bonds and covalent bonds 3. Explain the concepts of wave mechanics 4. Explain the Born-Oppenheimer theory 5. Explain the concept of the atomic orbital Schrodinger equation 		
Content		<ul style="list-style-type: none"> • Understanding atoms and atomic orbitals • The theory of valence bonds and covalent bonds (atomic orbitals and molecular orbitals) and their implications for spectroscopy 		

	<ul style="list-style-type: none"> • Wave mechanics • Born-Openheimer Theory • Schrodinger's equation of atomic orbitals 																		
Study and examination requirements and forms of examination	Final score (NA) is calculated as follows:																		
	<table border="1"> <thead> <tr> <th>Intended learning outcomes</th> <th>Weight (%)</th> <th>Technique of assessment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25</td> <td>Written test: assignment, midterm</td> </tr> <tr> <td>2</td> <td>25</td> <td>Written test: assignment, midterm</td> </tr> <tr> <td>3</td> <td>15</td> <td>Written test: assignment, final examination</td> </tr> <tr> <td>4</td> <td>15</td> <td>Written test: assignment, final examination</td> </tr> <tr> <td>5</td> <td>20</td> <td>Written test: assignment, final examination</td> </tr> </tbody> </table>	Intended learning outcomes	Weight (%)	Technique of assessment	1	25	Written test: assignment, midterm	2	25	Written test: assignment, midterm	3	15	Written test: assignment, final examination	4	15	Written test: assignment, final examination	5	20	Written test: assignment, final examination
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5	20	Written test: assignment, final examination																	
Media employed	Power point slide presentation, video, Google classroom																		
Reading list	<p>Harvey, D., 2000, Modern Analytical Chemistry, McGraw-Hill Higher Education Pubs.</p> <p>Mitra, S., 2003, Sample preparation techniques in analytical chemistry, Wiley, Canada.</p> <p>Skoog, D.A., et al, 2004, Fundamentals of Analytical Chemistry 8th ed., Saunder College Pubs.</p>																		

Prepared by:	Verified by:	Authorized by:
		
Person responsible for the module	Student representative	Coordinator Program