



**UNIVERSITAS NEGERI YOGYAKARTA**  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
DEPARTMENT OF CHEMISTRY  
1 Colombo Street Yogyakarta 55281  
Phone (0274) 565411, Ext. 1398, Fax (0274)548203  
Website: <http://kimia.fmipa.uny.ac.id>, E-mail: [kimia@uny.ac.id](mailto:kimia@uny.ac.id)

**Bachelor of Science in Chemistry**

**MODULE HANDBOOK**

Module name:	Reactivity and Mechanism of Organic Reaction
Module level, if applicable:	Undergraduate
Code:	KIM6408
Sub-heading, if applicable:	-
Classes, if applicable:	2
Semester:	3 <sup>rd</sup>
Module coordinator:	Prof. Dr. Sri Handayani
Lecturer(s):	1. Prof. Dr. Sri Handayani 2. Prof. Dr. Sri Atun 3. Prof. Indyah Sulisty Arty
Language:	Bahasa Indonesia & English
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	<ul style="list-style-type: none"><li>• Lectures: 150 minutes lectures, 180 structured activities and 180 individual study per week</li><li>• Laboratory work: 170 minutes includes the laboratory work and it's reporting per week</li></ul>
Workload:	Total workload of the activity is 181,33 hours per semester which consists of 150 minutes lectures, 180 structured activities and 180 individual study and also 170 minutes laboratory work with it's reporting per week for 16 weeks
Credit points:	4 SKS (7 ECTS) with the details of 3 SKS (5 ECTS) lectures and 1 SKS (2 ECTS)
Prerequisites course(s):	Fundamentals of Organic Chemistry
Course Outcomes	After taking this course, the students are expected to be able to: CO1. Showing obedience, putting forward norms and ethics in learning CO2. Analyzing problem-solving strategy and theory in organic chemistry as lifetime learning support CO3. Showing independence and responsibility in doing structured tasks and independent tasks CO4. Showing concept analyzing ability and chemical mindset along with applying them CO5. Analyzing and making arguments in times of journal review and presentation
Content:	The subject of organic compounds' structure and reactivity contains concept, structure, physical and chemical traits and condensation reaction mechanism on carbonyl compound (aldehyde and ketone), amide, aromatic compound, aromatic heterocyclic, compound with poly-functional groups, carbohydrate, lipids, amino acid, and protein.

	<p>Main discussion involves:</p> <ul style="list-style-type: none"> <li>• Basic concept of organic compounds' structure and reactivity</li> <li>• condensation reaction of carbonyl compounds</li> <li>• Amide</li> <li>• Aromatic compound and aromatic heterocyclic</li> <li>• Carbohydrate and Lipids</li> <li>• Amino acid and protein</li> </ul>																											
Study / exam achievements:	<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 rowspan="5">1</td> <td rowspan="5">CO1, CO2, CO3, CO4, CO5</td> <td>1. The task of independent ability to compose a reaction mechanism</td> <td>Quizzes</td> <td>10%</td> </tr> <tr> <td>2. Structured tasks of the ability to make and use molecular models in stereochemistry</td> <td>Assignment</td> <td>20%</td> </tr> <tr> <td>3. Journal analysis presentation skills (Skills)</td> <td>Observation of presentation skills</td> <td>20%</td> </tr> <tr> <td>4. Midterm Exam</td> <td>Written test</td> <td>25%</td> </tr> <tr> <td>5. Final Exam</td> <td>Written test</td> <td>25%</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	1. The task of independent ability to compose a reaction mechanism	Quizzes	10%	2. Structured tasks of the ability to make and use molecular models in stereochemistry	Assignment	20%	3. Journal analysis presentation skills (Skills)	Observation of presentation skills	20%	4. Midterm Exam	Written test	25%	5. Final Exam	Written test	25%	Total				100%
No	CO	Assessment Object	Assessment Technique	Weight																								
1	CO1, CO2, CO3, CO4, CO5	1. The task of independent ability to compose a reaction mechanism	Quizzes	10%																								
		2. Structured tasks of the ability to make and use molecular models in stereochemistry	Assignment	20%																								
		3. Journal analysis presentation skills (Skills)	Observation of presentation skills	20%																								
		4. Midterm Exam	Written test	25%																								
		5. Final Exam	Written test	25%																								
Total				100%																								
Forms of media:	Board, LCD Projector, handouts, PPT slides, and stationaries																											
Reference:	<p>A. McMurry, John., Organic Chemistry, ninth edition, Cengage Learning, (2016)</p> <p>B. Michael B Smith, (2020), Reaction, Mechanism and Structure</p> <p>C. Organic chemistry journals Nikoorazm, M., Khanmoradi, M., Mohammadi, M, (2020), Guanine-La complex supported onto SBA-15: A novel efficient heterogeneous mesoporous nanocatalyst for onepot, multi-component Tandem Knoevenagel condensation–Michael addition–cyclization Reactions, Applied Organometalic Chemistry.</p>																											

### PLO and CO mapping

CO	PLO										
	Attitude	Generic Skill			Knowledge				Specific Skill		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	
C01					√						
C02							√				
C03					√						

C04								√		
C05							√			