PORTFOLIO
Monofunction Organic Compound

ACADEMIC YEAR 2023/2024 EVEN SEMESTER

Course Coordinator:
Prof. Dr. Suyatno, M.Si.

Teaching Team:
Prof. Dr. Mitarlis, M.Pd.
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Nurina Rizka Ramadhania, S.Si. M.Si.

Undergraduate Program of Chemistry Education

FACULTY OF MATHEMATICS AND NATURAL SCIENCE
UNIVERSITAS NEGERI SURABAYA

TABLE OF CONTENT

A. SEMESTER LEARNING ACTIYITY PLAN

A.1. COURSE IDENTITY

Module Name	**:**	**Mono-function Organic Compound**
Module level	:	Sarjana (S-1) / *Bachelor*
Course Code	:	
Subtitle, if applicable	:	-
Courses, if applicable	:	-
Semester/Term	:	3rd Semester/Second Year
Person responsible for the module	:	Prof. Dr. Suyatno, M.Si.
Lecturer (s)	:	- Prof. Dr. Mitarlis, M.Pd. - D
Language	:	Indonesian Language and English
Relation to curriculum	:	Compulsory course
Type of teaching, contact hours	:	Per week consists of : 3 hours face-to-face (1 hour face to face = 50 minutes / hour)
Workload	:	3 hours face-to-face, 3 hours structured assignments, 3 hours of independent study, over 15 weeks, a total of 135 hours face-to-face / semester
Credit Point	:	3 CU = 3 x 1.59 = 4.77 ECTS
Requirements according to the examination regulations	:	Basic Chemistry
Recommended Prerequisites	:	
Module Objectives/intended learning outcomes	:	1. Applying scientific process skills, critical and creative thinking, and problem-solving to produce accurate conclusions based on case study identification, while applying teaching, research, and management skills in chemistry education. 2. Demonstrating responsible attitudes by applying understanding of monofunctional organic compounds' properties in real-life applications. 3. Analyzing concepts (knowledge) regarding the structural theory of organic compounds, including monofunctional compounds: alkanes, alkenes, alkynes; alkyl halides; alcohols, phenols, ethers; aldehydes, ketones; carboxylic acids; and amines. 4. Integrating learning resources and ICT tools to support understanding of monofunctional organic compounds through case studies and collaboration.
Content	:	This course covers the structure, properties, and reactions of monofunctional organic compounds, including alkanes, alkenes, alkynes, alkyl halides, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, and amines.
Study and examination requirements and forms of examination	:	Students are considered competent and pass if they get at least a minimum score of 68 from these assessments: 1. Participatory Activities/Case Study Analysis: 52,5% 2. Project Result Assessment / Product Assessment: 25% 3. Portfolio: 7,5%

<table>
<tr><td></td><td></td><td>4. Test: 15%
Total: 100%, Convert the 0-100 scale value to a 0-4 scale and the letters are arranged as follows.
<table>
<tr><th>Letter</th><th>Number</th><th>Interval score</th></tr>
<tr><td>A</td><td>4.00</td><td>85 ≤ A < 100</td></tr>
<tr><td>A-</td><td>3.75</td><td>80 ≤ A- < 85</td></tr>
<tr><td>B+</td><td>3.50</td><td>75 ≤ B+ < 80</td></tr>
<tr><td>B</td><td>3.00</td><td>70 ≤ B < 75</td></tr>
<tr><td>B-</td><td>2.75</td><td>65 ≤ B- < 70</td></tr>
<tr><td>C+</td><td>2.50</td><td>60 ≤ C+ < 65</td></tr>
<tr><td>C</td><td>2.00</td><td>55 ≤ C < 60</td></tr>
<tr><td>D</td><td>1.00</td><td>40 ≤ D < 55</td></tr>
<tr><td>E</td><td>0.00</td><td>0 ≤ E < 40</td></tr>
</table></td></tr>
<tr><td>Media employed</td><td>:</td><td>Worksheet, Computer, LCD, LMS, White board, laboratory instruments</td></tr>
<tr><td>Reading List</td><td>:</td><td>1. McMurry, John. (2023). Organic Chemistry: A Tenth Edition. Houston, Texas: OpenStax. https://open.umn.edu/opentextbooks/textbooks/1498?utm_source=chatgpt.com
2. Solomons, T. W. G., Fryhle, C. B., & Snyder, S. A. (2021). Organic Chemistry (12th ed.). Wiley. Retrieved from https://newbooksnbooks.pk/products/organic-chemistry-12th-edition-by-t-w-graham-solomons
3. Klein, D. R. (2021). Essential Organic Chemistry (4th ed.). Wiley.
4. Bruice, P. Y. (2021). Organic Chemistry (9th ed.). Pearson.
5. Wardana, A. P., Abdjan, M. I., Aminah, N. S., Fahmi, M. Z., Siswanto, I., Kristanti, A. N., ... & Takaya, Y. (2022). 3, 4, 3′-Tri-O-methylellagic acid as an anticancer agent: in vitro and in silico studies. RSC advances, 12(46), 29884-29891.
6. Tukiran, T., Wardhana, A. P., Hidajati, N., & Shimizu, K. (2018). Two phenolic compounds from chloroform fraction of Syzygium polycephalum MIQ. stem bark (Myrtaceae). Molekul, 13(1), 23-29.</td></tr>
<tr><td>Date of last amandment</td><td>:</td><td>31 Januari 2025</td></tr>
</table>

A.2. COURSE TOPIC

This course discusses the structure, properties, and reactions of monofunctional organic compounds, including alkanes, alkenes, alkynes, alkyl halides, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, and amines. Learning is conducted through case studies to analyze functional group characteristics, reaction mechanisms, and compound identification based on real-life contexts and scientific literature. The course is supported by group discussions, question-and-answer sessions, reflection activities, and the use of ICT-based tools for research, documentation, and presentation, enabling students to integrate theoretical understanding with practical applications in chemistry education and everyday life.

A.3. COURSE PROGRAM

	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Undergraduate Program in Chemistry Education	Document Code

SEMESTER LEARNING PLAN

Course	CODE	Course Group	Credit Weight			SEMESTER	Date of Compilation
Monofunctional Organic Compounds	8420403318	Compulsory Courses of Study Program	T=3	P=0	ECTS=4.77	3	October 19, 2024

AUTHORIZATION	SP Developer	Course Group Coordinator	Study Program Coordinator
	Dr. Mitarlis, S.Pd., M.Si.	Prof. Dr. Suyatno, M.Si.	UTIYA AZIZAH

Learning model	Case Study	
Program Learning Outcomes (PLO)	PLO Study program that is charged to the course	
	PLO-3	Develop logical, critical, systematic and creative thinking in carrying out specific work in the field of expertise and in accordance with the work competency standards in the relevant field.
	PLO-5	Able to make decisions based on data/information in order to complete tasks that are his/her responsibility and evaluate the performance that has been carried out both individually and in groups, has an environmentally conscious edu- ecopreneurship spirit
	PLO-6	Able to demonstrate knowledge related to theoretical concepts of structure, dynamics and energy, as well as the basic principles of separation, analysis, synthesis and characterization of chemicals.
	PLO-10	Able to develop or implement science, technology and art that pays attention to and applies humanities values that are appropriate to the field of chemistry education in solving problems.
	Program Objectives (PO)	
	PO - 1	Integrating learning resources and ICT to support conceptual understanding in monofunctional organic compounds material through discussion and collaboration.
	PO - 2	Applying science process skills, critical thinking, creativity and problem solving to produce appropriate conclusions based on the results of the identification that has been carried out, and being able to apply educational, research and management skills in the implementation of chemistry education.
	PO - 3	Analyzing concepts (knowledge) about the theory of the structure of organic compounds, monofunctional compounds: Alkanes, alkenes, alkynes; alkyl halides; alcohols, phenols, ethers; aldehydes, ketones; carboxylic acids, and amines
	PO - 4	Having a responsible attitude by applying the understanding of learning materials in the monofunctional organic compounds course regarding the properties of compounds in implementation in everyday life.
	PLO-PO Matrix	

PO	PLO-3	PLO-5	PLO-6	PLO-10
PO-1				✔
PO-2	✔			
PO-3			✔	
PO-4		✔		

PO Matrix for Final Abilities of Each Learning Stage (Sub-PO)

PO	Week To															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1				✔										✔		
PO-2								✔								✔
PO-3	✔	✔	✔		✔	✔			✔		✔		✔			
PO-4							✔			✔		✔			✔	

Brief Description of Course	This course discusses the structure, properties, and reactions of monofunctional organic compounds, including alkanes, alkenes, alkynes, alkyl halides, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, and amines. Students actively learn concepts through case studies, analyzing the properties of functional groups, reaction mechanisms, and identifying compounds based on real-world scenarios or literature. Group discussions, questions and answers, and reflection are used to interpret the results of case studies and literature. Learning is supported by ICT-based tools for research, documentation, and presentation. Emphasis is placed on collaboration, reflection, and documentation of case analysis results, so that students can integrate theoretical knowledge with practical applications in chemistry education and everyday life.

Library

Main :

1. Carey, Francis A. 2000.ORGANICCHEMISTRY.fourth edition. TheMcGraw-Hill Companies, Inc. All rights reserved, New York, the United States ofAmerica. ISBN 0-07-290501-8,ISBN 0-07-117499-0 (ISE)
2. Fessenden, R. J. dan Fessenden,J. S. (1998).Kimia Organik. Jilid 1. Jakarta: Erlangga
3. Fessenden, R. J. dan Fessenden,J. S. (1998).Kimia Organik. Jilid 1. Jakarta: Erlangga
4. Hart, H. , Craine, L. E. &Hart, D. J. (2003).Kimia Organik. Suatu Kuliah Singkat. Edisi ke XI. Jakarta: Erlangga.
5. Michael B. Smith and Jerry March, 2007,Advance Organic ChemistryREACTIONS, Mechanism and structure , 6th edition, Published by John Wiley & Sons, Inc. ,Hoboken, New Jersey Published simultaneously in Canada
6. Solomon, T. W. G. & Fryhle, C. B. (2011).Organic Chemistry.New York: John Wiley& Sons, Inc
7. McMurry, John. (2023). Organic Chemistry: A Tenth Edition. Houston, Texas: OpenStax

Supporters:

1. Wardana, A. P., Abdjan, M. I., Aminah, N. S., Fahmi, M. Z., Siswanto, I., Kristanti, A. N., ... & Takaya, Y. (2022). 3, 4, 3′-Tri-O- methylellagic acid as an anticancer agent: in vitro and in silico studies. RSC advances, 12(46), 29884-29891.
2. Tukiran, T., Wardhana, A. P., Hidajati, N., & Shimizu, K. (2018). Two phenolic compounds from chloroform fraction of Syzygium polycephalum MIQ. stem bark (Myrtaceae). Molekul, 13(1), 23-29.

Supporting lecturer

Prof. Dr. Mitarlis, S.Pd., M.Si.
Dr.Hj. Rinaningsih, S.Pd., M.Pd.
Dr. Andika Pramudya Wardana, S.Si., M.Si.
Dr. Amiq Fikriyati, M.Pd.
Nurina Rizka Ramadhania, S.Si. M.Si.

Week 4	Final ability of each learning stage (Sub-PO)	Evaluation		Learning Assistance, Learning methods, Student Assignments, [Estimated Time]		Learning materials [Library]	Assessment Weight (%)
		Indicator	Criteria & Forms	Offline	Online		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Understand molecular structure and be able to determine the properties of organic compounds	1. Explains the basic theory of structure, classical atomic model. 2. Describe the atomic structure according to Lewis. 3. Designing various structures/isomers 4. Distinguish between the classical atomic theory and the Bohr model. 5. Calculate the formal charge of a substance given its molecular formula. 6. Explain the dual nature of electrons according to deBroglie 7. Make a diagram of the electron energy levels in an atom on the orbit n= 1,2,3, ... 8. Explains that the orbital theory is derived from the quantum mechanical atomic theory. 9. Explaining the theory of structure based on the orbital model 10. Provide examples of atomic structures based on the orbital model 11. Explain the orbital shapes of the s, p, and d subshells 12. Explaining the hybridization of an electron 13. Differentiate between sigma bonds and pi bonds, given the formula of an organic compound.	**Criteria:** 1. Assessment criteria: Qualitative for non-test or assignment assessments. Quantitative for test-based assessment criteria, such as the criteria in the mid-term or final exam exam outlines. 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Portfolio Assessment	Q&A, Class discussion, Discussion and presentation of case study analysis results on organic chemistry		**Material:** Structural theory: classical model, Bohr atomic model, quantum mechanical atomic model, orbital model, [1, 4, 5] **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Structural theory: classical model, Bohr atomic model, quantum mechanical atomic model, orbital model, [1, 4, 5] **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc*	10%

2	Understand molecular structure and be able to determine the properties of organic compounds	1. Explain the physical properties of compounds based on their structure 2. Explaining bond theory 3. Predicting the effect of chemical bond length 4. Calculating the magnitude of bond dissociation energy 5. Explaining the attraction between molecules 6. Explaining the molecular orbital (MO) theory 7. Explaining the theory of delocalization bonds 8. Distinguish between localized and delocalized bonds when given a molecular structure. 9. Describe the resonance structure of organic compounds when given their molecular formula/structure	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activity	Q&A, Class discussion, Completion of project assignments, making a summary in the form of a mind map or concept map 3 X 50		**Material:** Structural theory: Physical properties of compounds based on structure, Molecular orbital (MO) theory and delocalization theory. **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
3	Explains the structure of the nomenclature of the isomer concept as well as the properties and synthesis of alkane, alkene and alkyne compounds.	1. Describe the structural form of alkane and cycloalkane compounds, if their molecular formulas are given. 2. Give the name of alkane and cycloalkane compounds, if the structural formula is given or vice versa. 3. Create skeletal isomers given their molecular formulas 4. Explaining the conformational isomers of cycloalkane compounds 5. Explain the physical and chemical properties of alkane and cycloalkane compounds 6. Designing the synthesis of alkane and cycloalkane compounds from other compounds	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use essay questions; Performance assessment and practical assessment are carried out in an integrated manner with course learning. **Assessment Form** : Participatory Activity	Q&A, Class discussion, Completion of project assignments to create summaries (in the form of mind maps), 3 x 50 practice questions		**Material:** Alkanes and cycloalkanes: nomenclature, properties, isomers and compound synthesis structures **. References:** **Material:** Alkanes and cycloalkanes: nomenclature, properties, isomers and structural synthesis of compounds. **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%

4	Explain conformational geometric isomers and optical isomers in organic compounds.	1. Explain geometric isomers in alkenes and alicyclic compounds 2. Explain the conformation of acyclic and cyclic compounds 3. Explain optical isomers in organic compounds	**Criteria:** 1. In accordance with the research guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activity	Q&A, Class discussion, Completion of project assignments to create summaries (in the form of mind maps or concept maps), 3 x 50 practice questions		**Material:** Alkenes and alkynes: structure, nomenclature, properties, isomers and compound synthesis. **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John* *Wiley & Sons, Inc.*	10%
5	Understanding stereochemical theory includes: geometric isomers in alkenes, geometric isomers in cyclic compounds, conformation of open-chain compounds, forms of cyclic compounds, cyclohexane conformers	1.1. Explain stereochemistry, geometric isomers in alkenes and cyclic compounds 2.2. Explain about conformational isomers 3.3. Analyze the types of isomers in compounds 4.4. Provide examples of compounds in each type of isomer.	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use essay questions; Performance assessment and practical assessment are carried out in an integrated manner with course learning. **Assessment Form** : Participatory Activity	Q&A, Class discussion, Completion of project assignments to create summaries (in the form of mind maps or concept maps) 3 X 50 practice questions		**Material:** Stereochemical theory includes: geometric isomers in alkenes, geometric isomers in cyclic compounds, conformation of open-chain compounds, forms of cyclic compounds, chirality conformers, absolute and relative configurations and more than one carbon atom. References **:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* References **:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	5%

6	Analyzing the structure, nomenclature, properties and synthesis of alkyl halogenide compounds and the SN-1 and SN-2 reaction mechanisms.	1. Analyzing the structure of alkyl halide compounds 2. Comparing the physical and chemical properties of alkyl halide compounds 3. Analyzing the synthesis reactions of alkyl halide compounds 4. Demonstrate the	**Criteria:** 1. in accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a	Q&A, Class discussion, Project assignment completion, 3 x 50 practice questions		**Material:** Alkyl halogenides: structure, nomenclature and properties as well as synthesis of alkyl halogenide compounds. **References:** *Fessenden, RJ and Fessenden, JS (1998).*	5%

		SN-1 and SN-2 reaction mechanisms of alkyl halides.	weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use essay questions. **Assessment Form** : Participatory Activity			*Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Alkyl halogenides: structure, nomenclature and properties as well as synthesis of alkyl halogenide compounds. **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	
7	Analyzing the structure, nomenclature, properties and synthesis of alkyl halogenide compounds and introducing the SN-1 and SN-2 reaction mechanisms.	1. Analyzing the SN1 and SN2 reaction mechanisms 2. Applying examples of SN1 and SN2 reactions 3. Making a synthesis reaction of alkyl mono halogenide compounds	**Criteria:** 1. in accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activity	Presentation of Q&A discussion 3 X 50		**Material:** Alkyl halogenides: structure, nomenclature and properties as well as synthesis of alkyl halogenide compounds. **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%

8	complete the mid-term exam	Can complete the mid-term exam properly and correctly	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Test	Mid-term exam 3 x 50		**Material:** UTS material starting from structural theory, alkanes, alkenes, and alkynes, stereochemistry, and alkyl halide compounds . **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** UTS material starting from structural theory, alkanes, alkenes, and alkynes, stereochemistry, and alkyl halide compounds . **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	5%
9	Explain the structure, nomenclature and properties of aromatic hydrocarbons and be able to apply substitution reactions for the synthesis of aromatic compounds.	1.1. Explain the molecular structure of aromatic compounds. 2. Explain the relationship between the structure of aromatic molecules and resonance stability. 3. Explain the substitution reaction in aromatic compounds. 4. Explain the synthesis reaction of an aromatic compound. 2.Describe the structure of monocyclic aromatic hydrocarbons 1. Explain the nomenclature of aromatic hydrocarbons 2. Name aromatic hydrocarbons according to the nomenclature rules	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Form of Assessment** : Project Results Assessment / Product Assessment	Q&A, Class discussion, Case study on aromatic compounds Presentation on analysis results and case studies related to aromatic compounds 1 X 50		**Material:** Aromatic hydrocarbons: structure, nomenclature, properties of aromatic hydrocarbons Substitution reactions, addition and reaction rules in aromatic rings **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Topic:** Aromatic hydrocarbons: structure, nomenclature, properties of aromatic hydrocarbons Substitution reactions, addition reactions and reaction rules in aromatic rings **References:** *McMurry, John. (2023). Organic Chemistry: A Tenth Edition. Houston, Texas: OpenStax*	10%

10	Understanding the structure, nomenclature, classification of properties, differences and similarities and synthesis of alcohol – phenol – ether compounds.	1. Explain the structure of compounds from the alcohol-phenol and ether groups. 2. Explain the physical and chemical properties of compounds from the alcohol-phenol and ether groups. 3. Explain the synthesis reactions of compounds from the alcohol-phenol and ether groups.	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Portfolio Assessment	Presentation Discussion on case study of alcohol-phenol-ether compound 3 X 50		**Material:** Alcohol – phenol – ether: structure, nomenclature, classification of properties, differences and similarities and their synthesis. Uses and applications of alcohol, ether, and phenol compounds. **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Alcohols – phenols – ethers: structure, nomenclature, classification of properties, differences and similarities, and their synthesis. Uses and applications of alcohol, ether, and phenol compounds. **References:** *McMurry, John. (2023). Organic Chemistry: A Tenth Edition. Houston, Texas: OpenStax* **Material:** Phenolic Compounds **References:** *Wardana, AP, Abdjan, MI, Aminah, NS, Fahmi, MZ, Siswanto, I., Kristanti, AN, ... & Takaya, Y. (2022). 3, 4, 3'-Tri-O-methylellagic acid as an anticancer agent: in vitro and in silico studies. RSC advances, 12(46), 29884-29891.* **Material:** Phenolic Compounds **References:** *Tukiran, T., Wardhana, AP,*	5%

						Hidajati, N., & Shimizu, K. (2018). Two phenolic compounds from chloroform fraction of Syzygium polycephalum MIQ. stem bark (Myrtaceae). Molecules, 13(1), 23-29.	
11	Understanding the structure, nomenclature, classification of properties, differences and similarities and synthesis of alcohol – phenol – ether compounds.	1.1. Classify alcohol compounds based on the number of –OH groups in one molecule. 2.2. Differentiate the physical properties of alcohol-phenol-ether compounds. 3.3. Designing reactions to produce alcohol–phenol–ether compounds. 4.4. Analyze the uses and disadvantages of alcohol compounds	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Form of Assessment** : Project Results Assessment / Product Assessment	Q&A, Class discussion, Project-based learning, assignment to make a summary in the form of a concept map, mind map) Work on a 3 X 50 mind map-based LKM		**Material:** Alcohol, phenol, ether materials References **:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Alcohol – phenol – ether: structure, nomenclature, classification of properties, differences and similarities, and their synthesis. Uses and applications of alcohol, ether, and phenol compounds. **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.* **Topic:** Alcohols – phenols – ethers: structure, nomenclature, classification, properties, differences and similarities, and synthesis. Uses and applications of alcohols, ethers, and phenols. **References:** *McMurry, John. (2023). Organic Chemistry: A Tenth Edition. Houston, Texas: OpenStax* **Material:** Phenolic Compounds	5%

						References: *Wardana, AP, Abdjan, MI, Aminah, NS, Fahmi, MZ, Siswanto, I., Kristanti, AN, ... & Takaya, Y. (2022). 3, 4, 3'-Tri-O-methylellagic acid as an anticancer agent: in vitro and in silico studies. RSC advances, 12(46), 29884-29891.* **Material:** Phenolic Compounds **References:**	
						Tukiran, T., Wardhana, AP, Hidajati, N., & Shimizu, K. (2018). Two phenolic compounds from chloroform fraction of Syzygium polycephalum MIQ. stem bark (Myrtaceae). Molecules, 13(1), 23-29.	
12	Understand the structure, nomenclature, properties and be able to predict isomers and be able to design and synthesize carbonyl compounds.	1.1. Structure of aldehyde and ketone compounds 2. Explain the physical and chemical properties of aldehyde and ketone compounds 3. Explain the synthesis reactions of aldehyde and ketone compounds 2.4. Explain the uses of aldehyde and ketone compounds	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Project Result Assessment / Product Assessment	Q&A, Class discussion, Project-based learning Completion of project assignments (making a summary in the form of a concept map or mind map) 3 X 50		**Material:** Aldehyde and ketone material **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Aldehyde and ketone materials **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc* **Material:** Carbonyl compounds **References:** *Solomon, TWG & Fryhle, CB (2011). Organic*	5%

						Chemistry. New York: John Wiley & Sons, Inc.	

13	Explains the structure, nomenclature, isomers, properties, especially acidity and synthesis of carboxylic acids and their derivatives.	1. Explain the structure of carboxylic acid compounds and their derivatives 2. Explain the physical and chemical properties of carboxylic acid compounds and their derivatives 3. Explain the synthesis reactions of carboxylic acid compounds and their derivatives	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Project Result Assessment / Product Assessment	Q&A, Class discussion, Project-based learning Completion of project assignments (making a summary in the form of a concept map or mind map) 3 X 50		**Material:** Carboxylic acid derivatives **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Carboxylic acid derivatives **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc* **Material:** 1. Carboxylic acids: structure, nomenclature, isomers, properties and synthesis 2. Carboxylic acid derivatives: structure, nomenclature, isomers, properties and synthesis. **References:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc*	5%
14	Understanding the structure, nomenclature, isomers, properties, especially acidity and synthesis of carboxylic acids and their derivatives	1.1. Explain the structure and nomenclature of carboxylic acid derivatives 2.2. Explain the reactions that occur in carboxylated acid derivative compounds. 3.3. Explain the reaction for making carboxylated acid derivatives	**Criteria:**	Q&A, Class discussion, Project-based learning Completion of project assignments (making a summary in the form of a concept map or mind map) 3 X 50		**Material:** carboxylic acid derivatives **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%

			2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Project Result Assessment / Product Assessment				

15	Explains the structure, nomenclature, properties (basicity), reactions, and synthesis of amine compounds.	1. Explain the structure of amine compounds 2. Explain the physical and chemical properties of amine compounds 3. Explain the synthesis reactions of amine compounds	**Criteria:** 1. In accordance with the assessment guidelines in effect at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Participatory Activities, Project Result Assessment / Product Assessment	Q&A, Class discussion, Project-based learning Completion of project assignments (makıng a summary ın the form of a concept map or mind map) 3 X 50		**Material:** Amines: structure, nomenclature, properties and synthesis of amines **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
16	complete the UAS with the material that has been studied	can complete the UAS well and correctly	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weighting of 20%; Assignments with a weighting of 30%; Mid-term exam with a weighting of 20%; Final exam with a weighting of 30%; Mid-term exam and final exam use multiple choice and essay questions. **Assessment Form** : Test	Test method: UAS 2 X 50		**Material:** Material as discussed **in the References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	10%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	52.5%
2.	Project Result Assessment / Product Assessment	25%
3.	Portfolio Assessment	7.5%
4.	Test	15%
		100%

Notes

1. **Study Program Graduate Learning Outcomes (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of the study program obtained through the learning process.
2. **The PLO assigned to a course** is a number of learning outcomes of study program graduates (CPL-Study Program) which are used to form/develop a course consisting of aspects of attitude, general skills, specific skills and knowledge.
3. **Program Objectives (PO)** are the abilities that are specifically described in the PLO that are assigned to the course, and are specific to the study material or learning material of the course.
4. **Sub-PO Course (Sub-PO)** is a capability that is specifically described from PO that can be measured or observed and is the final capability planned at each stage of learning, and is specific to the learning material of the course.
5. **The assessment indicators** for students' learning process and outcomes are specific and measurable statements that identify students' learning outcomes or abilities, accompanied by evidence.
6. **Assessment criteria** are benchmarks used to measure or quantify learning achievement in assessments based on established indicators. Assessment criteria serve as guidelines for assessors to ensure consistent and unbiased assessments. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lectures, Responses, Tutorials, Seminars or equivalent, Practicals, Studio Practicals, Workshop Practicals, Field Practicals, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.

10. **Learning materials** are details or descriptions of study materials that can be presented in the form of several main and sub-main topics.
11. **The assessment weight** is the percentage of the assessment for each sub-PO achievement, the amount of which is proportional to the level of difficulty of achieving the sub-PO, and the total is 100%.
12. TM=Face to Face, PT=Structured Assignment, BM=Independent Learning.

This RPS has been validated on October 19, 2024

Coordinator of the Undergraduate Chemistry Education Study Program

UTIYA AZIZAH NIDN 0015076503

UPM Undergraduate Chemistry Education Study Program

NIDN 0012067905

A.4. MAPPING OF LEARNING OUTCOMES – COURSE OUTCOMES

A.4.1. The Expected Program Learning Outcomes (PLO) of Undergraduate Program of Education Chemistry (UPCE)

Competency SSC-ASIIN	Aspect	PLO	DESCRIPTION
Social competences	**Attitudes 1 (AT-1)**	PLO 1	Demonstrates religious, national, and cultural values, as well as academic ethics, in carrying out their duties
	Attitudes 2 (AT-2)	PLO 2	Demonstrates a resilient, collaborative, adaptive, innovative, inclusive, lifelong learning, and entrepreneurial character
	General Skills 1 (GS-1)	PLO 3	Develops logical, critical, systematic, and creative thinking in carrying out specific work in the field of expertise and in accordance with the work competency standards in the relevant field.
	General Skills 2 (GS-2)	PLO 4	Develops self-sustainably and collaborates.
	General Skills 3 (GS-3)	PLO 5	Makes decisions based on data/information to complete tasks that are their responsibility and evaluate the performance carried out both individually and in groups, and have an environmentally conscious edu-ecopreneurship spirit.
Specialist competences	**Knowledge 1 (KN-1)**	PLO 6	Demonstrates knowledge related to theoretical concepts of structure, dynamics, and energy, as well as the basic principles of separation, analysis, synthesis, and characterization of chemicals.
	Knowledge 2 (KN-2)	PLO 7	Demonstrates pedagogical knowledge of chemistry and applies it in designing, implementing, and evaluating learning.
	Knowledge 3 (KN-3)	PLO 8	Masters laboratory management based on the principles of Occupational Safety and Security (K3), managing the laboratory and using its equipment, and how to operate chemical instruments
	Knowledge 4 (KN-4)	PLO 9	Design, implement, evaluate learning, and develop chemistry learning media by utilizing Information and Communication Technology.
	Special Skills 1 (SS-1)	PLO 10	Develops or implements science, technology, and art that pay attention to and apply humanities values that are appropriate to the field of chemistry education in solving problems.
	Special Skills 2 (SS-2)	PLO 11	Masters the basics of scientific methods, designing and implementing research, compiling scientific reports, and communicating them both orally and in writing by utilizing information and communication technology in the field of education

A4.2. The Program Education Objectives (PEOs) of Chemical Kinetics.

PEO-01: Mastering in the concepts of chemistry, chemistry learning, laboratory management, scientific methods, and ICT, and is able to apply them to problem solving in their work.

PEO-02: A high-level thinking ability to communicate ideas verbally and in writing, ability to take the right initiatives and decisions, and lead working groups in relevant fields.

PEO-03: Ability to collaborate, be honest, and be responsible for work in the field of expertise and entrepreneurship in the field of education that is environmentally friendly (green-edupreneurship).

PEO-04: Capability to continue to develop and lifelong learning to continue education, both formal and informal

PEO-05: Ability to develop and apply chemical competencies along with advances in science and technology, and humanities values

A4.3. Mapping of Program Learning Outcomes (PLO) – Program Education Objectives (PEOs)

	PLO 3 **(GS-1)**	PLO 5 **(GS-3)**	PLO 6 **(KN-1)**	PLO 10 **(SS-1)**
PEO 1			√	√
PEO 2	√	√		
PEO 3	√	√		
PEO 4	√			
PEO 5			√	√

B. COURSE ASSESSMENT

B.1. Assessment Rubric

Critical Thinking & Problem-Solving Aspects

- Analysis of structure–property–reactivity relationships of monofunctional organic compounds
- Inductive and deductive reasoning in functional group behavior and reaction mechanisms
- Problem-solving skills in predicting reaction outcomes and compound transformations
- Identification and analysis of reaction mechanisms of monofunctional organic compounds

Collaboration & Academic Attitude Aspects

- Teamwork and active participation in group discussions and case studies
- Responsibility and independence in completing assignments and projects
- Academic integrity in literature use, data interpretation, and reporting
- Conceptual Knowledge of Mono-function Organic Compounds
- Understanding of structural theory and classification of monofunctional organic compounds
- Understanding of physical and chemical properties of functional groups
- Understanding of characteristic reactions and basic reaction mechanisms

Scientific Communication Aspects

- Case study reports and project documentation
- Use of appropriate scientific terminology and chemical representations

B.2. Assessment System

1. Participatory Activities/Case Study Analysis: 52,5%
2. Project Result Assessment / Product Assessment: 25%

3. Portfolio: 7,5%
4. Test: 15%

Success Criteria of Program Learning Outcomes (PLO)

Excellence	≥ 75
Good	≥ 65
Satisfy	≥ 50
Failed	< 50

Final index for undergraduate program defined as follow:

Final Index	Range
A	4 (85 ≤-≥ 100)
A-	3.75 (80 ≤-< 85)
B+	3.5 (75 ≤- < 80)
B	3 (70 ≤-< 75)
B-	2.75 (65 ≤-<75)
C+	2.5 (60 ≤-<65)
C	2 (55 ≤-<60)
D	1 (40 ≤-<55)
E	0 (0 ≤-<40)

C. COURSE DEVELOPMENT

C.1. Academic Year 2023/2024 even semester

Parameter	∑ of person	Percentage
Number or students taking this subject	77	100%
Number of students who pass at first attempt (>C^+)	77	100%
Number of students who must take remedial	0	0%
Number of failed students after remedial (D & E)	0	0%

C.2. Problems Analysis

In 2023/2024 academic year in the Mono-function Organic Compound course, there were 100 % students had passed the examination at the first attempt. The number of students who must took the remedial examination is 0%.

C.3. Solutive Strategy

New teaching and learning methods should be developed for the next academic years, consisting of:

1. Redesigning the course material to become more interesting and interactive to stimulate student's interest to this course.
2. Enhance critical thinking skills of students with exchange the methods and models of learning

D. APPENDIX
D.1. DOCUMENT OF COURSE ACTIVITY
D.1.1. Lecture's journal and student's attendance form siakadu.uneca.ac.id

UNIVERSITAS NEGERI SURABAYA

Kampus Unesa 2
Jl. Kampus Unesa Lidah Wetan, Surabaya, 60213
T. 6231-99421834/99421835
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E. info@unesa.ac.id/www.unesa.ac.id

PRESENSI KULIAH
Periode 2024/2025 Gasal

Mata Kuliah : **Senyawa Organik Monofungsi**
Kelas : 2023A
Prodi : S1 Pendidikan Kimia

Dosen : Dr. Amiq Fikriyati, M.Pd.
Prof. Dr. Mitarlis, S.Pd., M.Si.
Nurina Rizka Ramadhania, S.Si. M.Si.

No	NIM	Nama Mahasiswa	Pertemuan Ke																%
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
			04 Sep 24	11 Sep 24	18 Sep 24	25 Sep 24	02 Oct 24	09 Oct 24	16 Oct 24	23 Oct 24	30 Oct 24	06 Nov 24	13 Nov 24	20 Nov 24	28 Nov 24	05 Dec 24	11 Dec 24	19 Dec 24	
1.	23030194006	GHAITZA ZAHIRA RAMADHANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	23030194007	FADILA PRIMA BUDI NUR HAMIDAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
3.	23030194009	SAHIRA FACHRUN NADA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	23030194018	ZAHWA TURROHMAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
5.	23030194019	HANI MANGGAR ARIWIJI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	23030194023	SAYYIDAH HABIBAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	23030194025	YULIA TRI BUNGA ADELIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	23030194032	MUHAMMAD FARHAN IVAN PHALOSA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
9.	23030194034	WAFIQ MUMAYYAZA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	23030194040	ZAIDAN ALAUDDIN RIFQI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	23030194043	UMI KULSUM	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
12.	23030194046	DANDI UMAR FAQIH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	23030194056	FANY AULIA NUR FADHILAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	23030194072	NURUL FAIZAH CHOIRINA	H	H	H	H	H	H	H	H	H	H	H	H	H	S	H	H	100 %
15.	23030194078	NADIRA ZALVIYA WARDHANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	23030194097	NURALYA YUNIARWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
17.	23030194098	MUHAMMAD AFIF NASHRULLOH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	23030194101	FAHMA SAIRIL ULUMIL KHOIRIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	23030194103	TANIA PUTRI AURELIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
20.	23030194106	SUCI DEWI OKTAFIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	23030194114	PUJA RAHAYU	H	H	H	H	H	H	H	H	A	A	A	A	A	A	A	A	50 %
22.	23030194121	NATANIA DEVINA SAHYA PUTRI DEWI	H	H	H	H	H	H	H	H	H	H	H	H	H	A	H	H	93.8 %
23.	23030194132	RAFLI DWI DARMAWAN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
24.	23030194133	EVA AYU SAFITRI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																			

UNIVERSITAS NEGERI SURABAYA

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T. 6231-99421834/99421835
F. 6231-99424002
E. info@unesa.ac.id/**www.unesa.ac.id**

PRESENSI KULIAH
Periode 2024/2025 Gasal

Mata Kuliah : **Senyawa Organik Monofungsi**
Kelas : 2023E
Prodi : S1 Pendidikan Kimia

Dosen : Dr. Amiq Fikriyati, M.Pd.
Dr.Hj. Rinaningsih, S.Pd., M.Pd.
Nurina Rizka Ramadhania, S.Si. M.Si.

No	NIM	Nama Mahasiswa	Pertemuan Ke																%
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
			05 Sep 24	12 Sep 24	19 Sep 24	26 Sep 24	03 Oct 24	10 Oct 24	17 Oct 24	24 Oct 24	31 Oct 24	07 Nov 24	14 Nov 24	21 Nov 24	28 Nov 24	05 Dec 24	12 Dec 24	19 Dec 24	
1.	23030194109	MUTIA MAIDAH AMALIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	23030194110	NASYWA PUTRI RAMADHANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
3.	23030194111	TRI FITRIATUS SA'DIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	23030194113	DEVITA ANANDA CALISTYA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
5.	23030194115	NINA AYU FIRNANDA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	23030194116	ANISA PUTRI LARASATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	23030194117	BELVA AURELLIA SAFIRILLAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	23030194118	DWI NUR BAITI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
9.	23030194119	PRAMUDITA RATNA SARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	23030194120	ANANDA MUIZATUR RAMADHAN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	23030194122	BAGAS PUTRA OKTAVIANTO	H	H	H	H	H	H	H	H	H	H	S	H	H	H	H	H	100 %
12.	23030194123	NICO AVAN ARDIANSYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	23030194124	SITI A'ISATUL HURIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	23030194125	WAHYU MAULIDAH SHOLEHA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
15.	23030194126	HANNY AMELIA AGASTA PRAMESWARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	23030194127	VAJRINA NUR AIN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
17.	23030194128	NUR ANISYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	23030194129	INKA PUTRI SURYANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	23030194130	NISA NOR RHAMAGITA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
20.	23030194131	THERESIA PUTRI MANIAR SITANGGANG	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	23030194134	MUHAMMAD ADITYA RAJASA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
22.	23030194135	FINDY NUR HIDAYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
23.	23030194136	AMELIA EKA OKTAVIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
24.	23030194137	AZZAH MUKMINAH YULI AZIZAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
25.	23030194139	NUR IZZABILLAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
26.	23030194140	FARIZ DEVA ARDIANSYAH	H	H	H	H	H	H	H	H	H	H	S	H	H	H	H	H	100 %
27.	23030194141	DIVA SALSABILA MUTIARA RAHARDJO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																			

D.1.2. Sample of statement of examination official report

D.2. SAMPLE OF STUDENT WORK

D.2.1. Sample of Test Paper

Lecturer : Team
Test Characteristic : *Closed book*

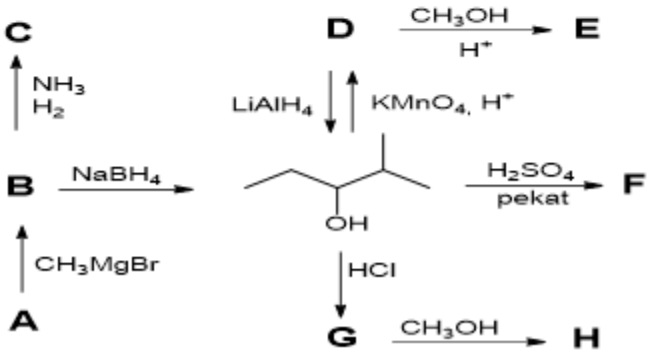
Instructions:
1. Please do the questions below in order and there is no need to rewrite the questions.
2. Good luck with your work, we appreciate honesty and may you always be healthy.

Questions:

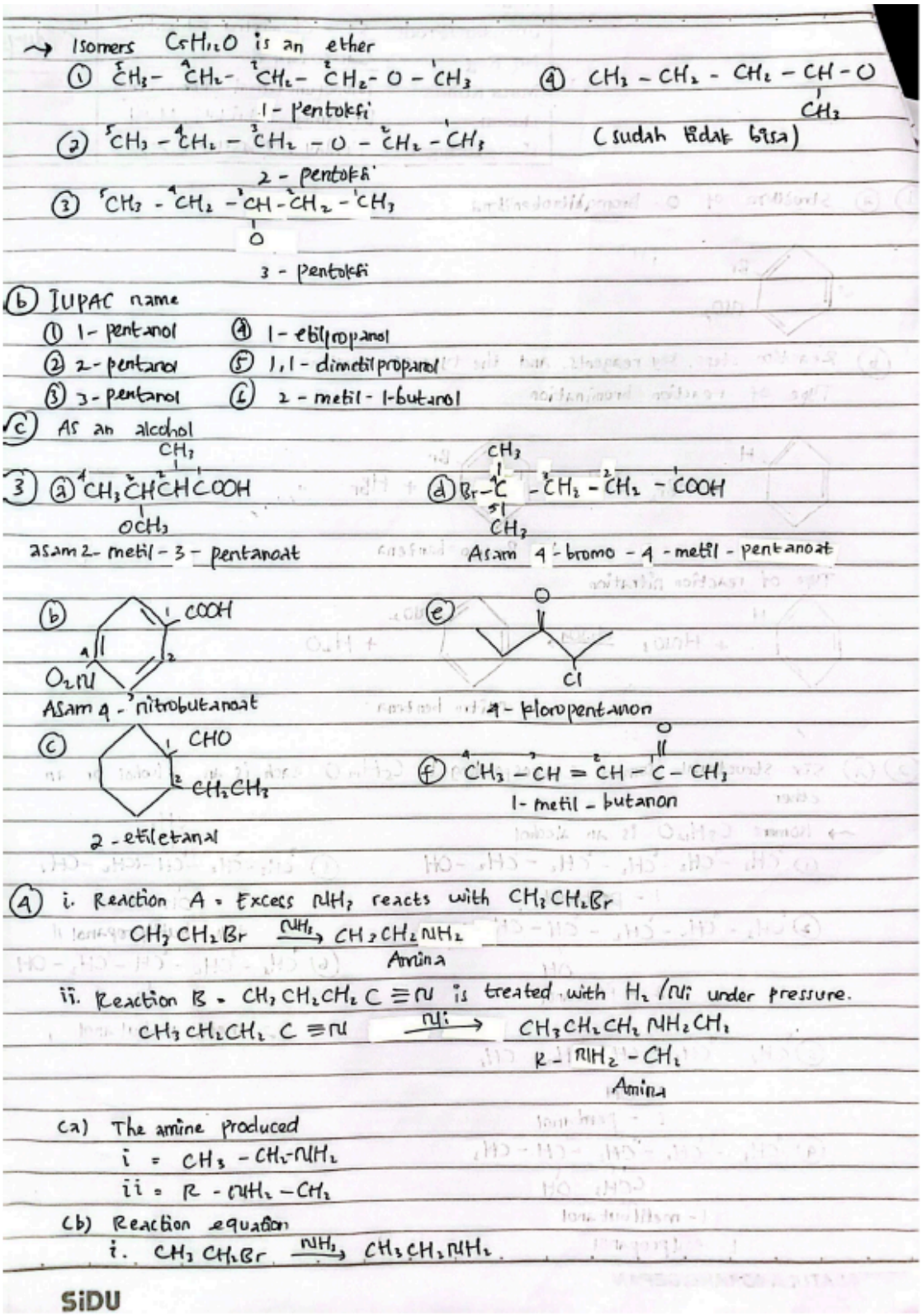
1. A research laboratory discovers several unlabeled vials containing organic compounds suspected to be:
   a. *O*-hydroxybenzoic acid
   b. 2,5-dibromo-nitro benzene
   c. 3-ethyl-*N*,*N*,6-trimethyl cycloheptanamine
   d. *N*-methyl-2-butylamine
   e. (1R,2R)-2-bromo-1-cyclopentanol

   Based on their IUPAC and common names, reconstruct the molecular structures so the team can identify and relabel the samples accurately.
2. A safety assessment team investigates why two chemicals:
   a. Phenol and cyclohexanol
   b. Aniline dan cyclohexylamine

   Phenol and cyclohexanol, show drastically different corrosion effects on metal surfaces, and why aniline-based waste behaves differently from cyclohexylamine solutions during neutralization. Analyze the acidity and basicity differences to explain the observed behaviors.
3. An industrial facility reports an unexpected by-product during benzaldehyde nitration and requires prediction of the major product for an improved reaction pathway. Additionally, the quality-control division needs to confirm whether their reduction of acetophenone was successful. Write and analyze the reactions involved to guide their troubleshooting.
4. A chemical manufacturing company finds incomplete reaction schemes in their archived process documents. You are tasked with reconstructing the missing steps and naming each product accurately so the processes can be safely replicated and validated.



D.2.2. Sample of Student's Work



D.2.3. Sample of Student's Evaluation

PROGRAM STUDI Pendidikan Kimia
DAFTAR NILAI MAHASISWA
Mata Kuliah : Senyawa Organik Monofungsi
Kelas : 2023A
Tahun Ajaran : 2024/2025 Gasal

Original data :

Keterangan :
1. Komponen nilai yang diisi hanya : Part,Tugas,UTS dan UAS
2. Nilai UAS mahasiswa dengan kehadiran dibawah 73.3% (kolom dg warna merah) tidak akan disimpan
3. Jangan merubah apapun di dokumen ini kecuali pada point nomer satu di atas.
4. PPTI / BAAK tidak menerima file nilai untuk diupload. Proses upload nilai dilakukan oleh dosen pengampu yang bersangkutan.

No	NIM	Nama Mahasiswa	Angkatan	Kehadiran	Part	Tugas	UTS	UAS	NA	Huruf	Pakai
1	23030194006	GHAITZA ZAHIRA RAMADHANI	2023	100%	88.6667	90.8333	78	61	78.8833	B+	1
2	23030194007	FADILA PRIMA BUDI NUR HAMIDAH	2023	100%	91.6667	93	86	70	84.4333	A-	1
3	23030194009	SAHIRA FACHRUN NADA	2023	100%	78.6667	87.5	70	56.5	72.9333	B	1
4	23030194018	ZAHWA TURROHMAH	2023	100%	77	84.8333	68	61	72.75	B	1
5	23030194019	HANI MANGGAR ARIWIJI	2023	100%	80	81.6667	93	65	78.6	B+	1
6	23030194023	SAYYIDAH HABIBAH	2023	100%	86.6667	89.8333	97	72.5	85.4333	A	1
7	23030194025	YULIA TRI BUNGA ADELIA	2023	100%	83.3333	90	80	65	79.1667	B+	1
8	23030194032	MUHAMMAD FARHAN IVAN PHALOSA	2023	100%	78.3333	92.3333	70	66	77.1667	B+	1
9	23030194034	WAFIQ MUMAYYAZA	2023	100%	81.6667	91.5	85	62.5	79.5333	B+	1
10	23030194040	ZAIDAN ALAUDDIN RIFQI	2023	100%	86.6667	91.5	74	61	77.8833	B+	1
11	23030194043	UMI KULSUM	2023	100%	85	90.6667	84	74.5	83.35	A-	1
12	23030194046	DANDI UMAR FAQIH	2023	100%	88.6667	89.6667	75	67	79.7333	B+	1
13	23030194056	FANY AULIA NUR FADHILAH	2023	100%	80.3333	87.3333	68	61	74.1667	B	1
14	23030194072	NURUL FAIZAH CHOIRINA	2023	100%	76	85	68	60.5	72.45	B	1
15	23030194078	NADIRA ZALVIYA WARDHANI	2023	100%	75	88.1667	68	60	73.05	B	1
16	23030194097	NURALYA YUNIARWATI	2023	100%	75	82.3333	68	61	71.6	B	1
17	23030194098	MUHAMMAD AFIF NASHRULLOH	2023	100%	77	85.6667	70	63	74	B	1
18	23030194101	FAHMA SAIRIL ULUMIL KHOIRIYAH	2023	100%	81	88.3333	79	73.5	80.55	A-	1
19	23030194103	TANIA PUTRI AURELIA	2023	100%	83.3333	89.6667	68	58.5	74.7167	B	1
20	23030194106	SUCI DEWI OKTAFIA	2023	100%	75	88.3333	82	64.5	77.25	B+	1
21	23030194114	PUJA RAHAYU	2023	50%	0	81	0	0	24.3	E	1
22	23030194121	NATANIA DEVINA SAHYA PUTRI DEWI	2023	93.75%	75	80.8333	70	58	70.65	B	1
23	23030194132	RAFLI DWI DARMAWAN	2023	100%	88.6667	86.3333	70	58	75.0333	B+	1
24	23030194133	EVA AYU SAFITRI	2023	100%	92	89.6667	95	81.5	88.75	A	1

D.2.2. Sample of Validation Sheet for the Exam

UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES (FMNS)

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VALIDATION SHEET FOR THE MID-SEMESTER EXAM / END-OF-SEMESTER

Courses	:	Monofunctional Organic Compounds
Indicators	:	1. Students are able to construct molecular structures from IUPAC and common names 2. Students are able to analyze acidity and basicity based on molecular structure 3. Students are able to determine major reaction products and analyze regioselectivity 4. Students are able to complete organic reactions and evaluate correctness of IUPAC naming 5. Students are able to evaluate physical–chemical properties (boiling point, solubility, polarity) of simple organic compounds
Lecturers	:	Team
Instructions	:	Please place a check mark (√) in the column that most closely reflects your opinion. 1. Satisfactory 2. Good 3. Excellent

No	Aspects	Category		
		1	2	3
1	Introduction or instructions for answering the test items			√
2	Alignment of the test items with the indicators			√
3	Balance of item difficulty (easy, moderate, and difficult)			√
4	Scoring rubrics/guidelines are consistent with the test items			√
5	Completion time is appropriate to the time available			√
6	Allows for more than one acceptable correct answer (where applicable)			√
7	Each test item is independent and does not rely on other items			√
8	Wording is clear, communicative, and unambiguous			√
9	Tables, figures, graphs, maps, or similar materials are presented clearly and are legible (if any)			√

Comments/Suggestions

Surabaya,
Validator,

.....

Response from the Exam Author (Lecturer)

Surabaya,
Prepared by,

Dr. Amiq Fikriyati, M.Pd.

D.3. RECAPITULATION OF ASSESSMENT

D.3.1. Validate Test Item

The end-of-semester assessment for the Mono-function Organic Compound course consists of eight essay-type questions. The test items were validated through expert judgment by members of the course teaching team with expertise in Chemistry Education and Organic Chemistry. The validation process was conducted by evaluating the alignment of the questions with the course learning outcomes, as well as the appropriateness of language use, content accuracy, and construct validity. This process ensures that the assessment accurately measures students' understanding of monofunctional organic compounds and their ability to analyze structures, properties, and reaction mechanisms.

D.3.2 Percentage of PLO achievements of Mono-function Organic Compound at Academic Year 2023/2024

	PLO 03	PLO 05	PLO 06	PLO 10
EXELENCE	12%	12%	30%	13%
GOOD	56%	56%	68%	68%
SATISFY	32%	32%	3%	19%
FAILED	0%	0%	0%	0%
Averagge	**72.9**	**72.9**	**78.3**	**74.2**