



RENCANA PEMBELAJARAN SEMESTER (RPS) **(SEMESTER LEARNING PLAN) (SLP)**

DEPARTMENT OF CHEMISTRY

FAKULTY OF MATHEMATICS AND NATURAL SCIENCES

UNIVERSITY OF BENGKULU

Course Identity

Course Code	:	MIK-
Course Name	:	Advanced Organic Chemistry
Course Weight (credits)	:	2 sks
Semester	:	
Prerequisite Courses	:	-

Identity of Course Lecture

Lecturer Name	:	Dr. Eni widiyati, MS
Field Group	:	Organic Chemistry

Graduate Learning Outcomes (GLO) (CPL)

GLO Code		GLO Element
S-9	:	Demonstrate an attitude of being responsible for work in their field of expertise independently
KU-1		Able to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values in accordance with their field of expertise.
KU-2	:	Able to demonstrate independent, quality and measurable performance.
Scientific Study Materials	:	Organic Chemistry

Course Learning Outcomes (CLO) (CPMK)

: After following this course, students of the Chemistry Study Program (S2), FMIPA UNIB can explain the types of hybridization of carbon atoms in the formation of single, double and triple bond organic compounds. Can explain the formation of bonds and types of bonds that occur in organic compounds such as covalent bonds, polar covalent bonds, hydrogen bonds, Van Der Waals bonds and can explain the effect of these bonds on the properties of organic compounds. Can explain the classification of hydrocarbon compounds, nomenclature and structural isomers. Can name several functional groups, groups of organic compounds with functional groups and give the names of these groups of compounds. Can explain the influence of structure on physical properties and can explain reactions and reaction mechanisms that occur in groups of organic compounds. Can solve the reaction mechanism that occurs in aldehydes and ketones. Can explain the classification of carbohydrates, carbohydrate derivatives such as chitin and chitosan. Can explain the presence of artificial sweeteners and their side effects. Can explain oils and fats and the reactions that occur. Can explain the formation of proteins from their constituent amino acids and the reactions that occur in protein groups. Can explain the manufacture of bioplastics, biocellulose, utilization of carbohydrates for the manufacture of nanoparticles. Can explain how to isolate chitin and chitosan and their use in the health sector. Can explain the reaction mechanism of biodiesel formation. And can also explain the function of proteins for various treatments.

Learning Experience	:	Students are taught about the types of hybridization of carbon atoms in the formation of single, double and triple bond organic compounds. The formation of bonds and types of bonds that occur in organic compounds such as covalent bonds, polar covalent bonds, hydrogen bonds, Van Der Waals bonds and the effect of these bonds on the properties of organic compounds. Classification of hydrocarbon compounds, nomenclature and structural isomers. Several functional groups, groups of compounds with fungi and give the name of the group of compounds. The influence of structure on physical properties and can explain reactions and reaction mechanisms that occur in groups of organic compounds. The mechanism of the reaction that occurs in aldehydes and ketones. Classification of carbohydrates, carbohydrate derivatives such as chitin and chitosan. Artificial sweeteners and their side effects. Oils and fats and the reactions that occur. The formation of proteins from their constituent amino acids and the reactions that occur in protein groups. Manufacture of bioplastics, biocellulose, utilization of carbohydrates for the manufacture of nanoparticles. How to isolate chitin and chitosan and their use in the health sector. The reaction mechanism of biodiesel formation. Protein function for various treatments.
Reference List	:	1. Fessenden, R. J. dan Fessenden, J. S. , 1989, <i>KIMIA ORGANIK</i>, (penterjemah : Pudjaatmaka, A. H.), Jilid 1 dan 2, edisi 3, Penerbit Erlangga , Jakarta. 2. Hart, H., 1987, <i>KIMIA ORGANIK</i>, (penterjemah : Suminar Achmadi), edisi ke-enam, Penerbit Erlangga , Jakarta. 3. Smith, M.B. and March, J. 2007. <i>MARCH'S ADVANCED ORGANIC CHEMISTRY (REACTIONS, MECHANISMS, AND STRUCTURE)</i>, Sixth Edition, JOHN WILEY & SONS, INC., Publication, New Jersey-Canada. 4. McMurry, J., 2008. <i>ORGANIC CHEMISTRY</i>. Brooks/Cole Publishing Company, Monterey-California. 5. Pine,S.H., Hendrickson, J.B., Cram, D.J., Hammond, G.S. 1988. Alih Bahasa: Roehyati S. Penerbit ITB Bandung. 6. Solomon,T.W.G., Fryhle, C.B., Snyder, S.A. 2004. <i>ORGANIC CHEMISTRY</i>. JOHN WILEY & SONS, INC., Publication, 2004 New Jersey-Canada.

Stage	Final Ability	Subject Matter	Reference	Learning Methods	Time (minutes)	Evaluation*	
						Indicator/ CPL Code	Assessment Technique /Weight
1	2	3	4	5		6	7
1	Applying lecture rules and course assessment components	1. Lecture Contract 2. Study rules 3. Assessment components 4. Reference/ literature/ reference book	Ref No : 	-WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing the rules, assessment components and references	
2	Students can explain the type of hybridization of carbon atoms in the formation of single, double and triple bonds	Discussing the hybridization of carbon atoms (sp ³ , sp ² and sp) in the formation of organic compounds	Ref No : 1,2,3,4,5,6	--WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about the hybridization of carbon atoms (sp ³ , sp ² and sp) in the formation of organic compounds	Activity 4% Quis Task Midterm exam 2,5%
3	Students can explain the formation of bonds and the types of bonds that occur in organic compounds such as covalent bonds, polar covalent bonds, and between actions between molecules such as Van Der Waals bonds, hydrogen bonds and can explain the effect of these bonds on the properties of organic compounds.	Discuss about: single, double and triple covalent bonds The types of bonds that occur in organic compounds are covalent and polar covalent bonds and the requirements for the occurrence of these bonds The occurrence of intermolecular actions, namely Van Der Waals bonds, hydrogen bonds and the effect of these bonds on the properties of compounds such as boiling point and solubility.	Ref No : 1,2,3,4,5,6	- WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about: single, double and triple covalent bonds The types of bonds that occur in organic compounds are covalent and polar covalent bonds and the requirements for the occurrence of these bonds The occurrence of intermolecular actions, namely Van Der Waals bonds, hydrogen bonds and the effect of these bonds on the properties of compounds such as boiling point and solubility.	Activity 4% Quis 1% Task Midterm exam 2,5%
4	Students can explain the classification of hydrocarbon compounds, nomenclature and structural isomers	- Discusses the classification of hydrocarbons: alkanes, alkenes, alkynes, nomenclature and structural isomers	Ref No : 1,2,3,4,5,6	- WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about Classification of hydrocarbons: alkanes, alkenes, alkynes, nomenclature and structural isomers	Activity 4% Quis 1% Task Midterm exam 2,5%

5	Students can explain several functional groups, groups of compounds with fungi and give the name of the group of compounds Some of the reactions that occur in alkanes and alkenes	Discussing about: Multiple functional groups Group of functional group compounds: alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, benzene and their derivatives Nomenclature of functional group compounds Halogenation reactions and oxidation of alkanes Alkene addition reaction Markovnikov's rule	Ref No : 1,2,3,4,5	-- WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about : Multiple functional groups Group of functional group compounds: alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, benzene and their derivatives Nomenclature of functional group compounds Halogenation reactions and oxidation of alkanes Alkene addition reaction Markovnikov's rule	Activity 4% Quis 1% Task Midterm exam 2,5%
6	Students can explain some reactions how to distinguish groups of compounds with functional groups such as alcohols with phenols, primary, secondary and tertiary alcohols, aldehydes and ketones, esterification reactions	Discuss about : Some of the reactions that distinguish between alcohols and phenols, primary, secondary and tertiary alcohols Some reactions that differentiate between aldehydes and ketones Esterification reaction between alcohol and carboxylic acid	Ref No : 1,2,3,4,5	- WA Group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about : Some of the reactions that distinguish between alcohols and phenols, primary, secondary and tertiary alcohols Some reactions that differentiate between aldehydes and ketones Esterification reaction between alcohol and carboxylic acid	Activity 4% Quis 1% Task Midterm exam 2,5%
7	Students can explain the reaction mechanism that occurs in several chemical reactions such as halogenation of alkanes, alkenes and electrophilic aromatic substitution.	Discussing: Mechanism of free radical reactions polymerization reaction mechanism Mechanism of aromatic electrophilic substitution reaction	Ref No : 1,2,3,4,5	-WA Group -Elearning -zoom Ceramah Diskusi /Tanya jawab	2x50	Knowing About: Mechanism of free radical reactions polymerization reaction mechanism Mechanism of aromatic electrophilic substitution reaction	Activity 5% Quis 1% Task Midterm exam 2,5%
8	Mid-semester evaluation	Mid-Semester Exam (UTS)			2x50		

9	Students can explain the classification of carbohydrates and the differences in their structure, and can also explain reactions to carbohydrates and their reaction mechanisms	Discusses the classification of carbohydrates (monosaccharides, disaccharides, oligosaccharides, polysaccharides), including other polysaccharides glycogen, starch, pectin, chitin and chitosan and their structural differences The reactions that occur in carbohydrates (cyclization, hydrolysis, oxidation and reduction)	Ref No : 1,2,3,4,5	-WA Group -Elearning -zoom Ceramah Diskusi /Tanya jawab		Knowing about Classification of carbohydrates (monosaccharides, disaccharides, oligosaccharides, polysaccharides), including other polysaccharides glycogen, starch, pectin, chitin and chitosan and their structural differences The reactions that occur in carbohydrates (cyclization, hydrolysis, oxidation and reduction)	Activity 4% Quis 1% Task 2% Final exams 2%
10	Students can explain some artificial sweeteners, their side effects for health, benefits for humans, and their synthesis in the laboratory	Discuss about : Various artificial sweeteners, such as saccharin, sodium cyclamate, mannitol, etc.) Some side effects for health Advantages of using it Laboratory scale synthesis	Ref No : 1,2,3,4,5	-WA Group -Elearning -zoom Ceramah Diskusi /Tanya jawab	2X50	Knowing about : Various artificial sweeteners, such as saccharin, sodium cyclamate, mannitol, etc.) Some side effects for health Advantages of using it Laboratory scale synthesis	Activity 3,5% Quis 1% Task Final exams 2%
11	Students can explain how to isolate chitin, sources of chitin in nature, convert chitin into chitosan, the benefits of chitin in various fields	Students can explain how to isolate chitin, sources of chitin in nature, convert chitin into chitosan, the benefits of chitin in various fields	Ref No : 1,2,3,4,5	-WA Group -Elearning -zoom Ceramah Diskusi /Tanya jawab	2x50	Knowing about : Sources of chitin in nature. Converting chitin into chitosan. Chitin isolation method Various uses of chitin	Activity 3,5% Quis 1% Task 2% Final exams 2%
12	Students can explain how to make biocellulose and its benefits in various fields	Discuss about : Biocellulose production. Benefits of biocellulose in various fields	Ref No : 1,2,3,4,5	Independent task	2x50	Knowing about : Biocellulose manufacture. Benefits of biocellulose in various fields	Activity 3,5% Quis 1% Task 3% Final exams 2%

13	Students can explain the difference between peptides and proteins, the reactions that occur in amino acids and proteins, and the benefits of protein in medicine	Talking about Peptides and proteins The reactions that occur in amino acids and proteins and their reaction mechanisms. Benefits of protein in the field of medicine	Ref No : 1,2,3,4,5	- WA group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing Talking about Peptides and proteins The reactions that occur in amino acids and proteins and their reaction mechanisms. Benefits of protein in the field of medicine	Activity 3,5% Quis 1% Task Final exams 2%
14	Students can explain the difference between oil and fat, the reactions that occur in oil and fat, unsaponifiable fat, LDL, and HDL	Discussing about Lipids and their functions Oil and fat The reactions that occur in oils and fats and their reaction mechanisms. Unsaponifiable fat (cholesterol) HDL and LDL	Ref No : 1,2,3,4,5	- WA group -Elearning -zoom Lecture Discussion / Q&A	2x50	Knowing about lipids and their functions Oil and fat The reactions that occur in oils and fats and their reaction mechanisms. Unsaponifiable fat (cholesterol) HDL and LDL	Activity 3,5% Quis Task Final exams 2%
15	Students can explain the use of oils and fats in the manufacture of biodiesel, bioplastics, and soap	Discussing the reactions of making biodiesel Saponification reaction Ways of making bioplastics	Ref No : 1,2,3,4,5	- Independe nt task	2x50	Knowing about the reactions of making biodiesel Saponification reaction Ways of making bioplastics	Activity 3,5% Quis Task 3% Final exams 2%
16	End of semester evaluation	UJIAN AKHIR SEMESTER			2x50		20%