Anan College	Year	2024	Course Title	Organic Chemistry 2

Course Information

Course Code	1414A10	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Chemical Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Fundamentals of ORGANIC CHEMISTRY seventh edition		
Instructor	Sugiyama Yuuki		

Course Objectives

1. The student will name alcohols, ethers, carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones
2. The student will describe the general properties, synthetic methods, and reactions of alcohols and ethers
3. The student will describe common reactions and products of carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones and the differences in their reactivity.

Rubric

	Ideal Level	Standard Level	Minimum Level
Objective 1	Write the nomenclature of alcohols, ethers, carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones.	Write about 70% of the nomenclature of alcohols, ethers, carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones.	Write about 50% of the nomenclature of alcohols, ethers, carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones.
Objective 2	Accurately describe the general properties, synthetic methods, and reactions of alcohols and ethers, and plan synthetic methods.	Accurately describe the general properties, synthetic methods, and reactions of alcohols and ethers.	Describe the general properties, synthetic methods, and reactions of alcohols and ethers.
Objective 3	Accurately describe the general reactions and products of carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones, as well as the differences in their reactivities, and plan synthetic methods.	Accurately describe the general reactions and products of carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones, as well as the differences in their reactivities.	Describe the general reactions and products of carboxylic acids, carboxylic acid derivatives, aldehydes, and ketones, as well as the differences in their reactivities.

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	In this lecture, students learn about reactions and chemical phenomena characteristic of each "functional group" based on the same concept as organic chemistry (3rd year). Students also learn about organic materials that take advantage of the characteristics of functional groups.
Style	The lecture will follow almost the order of the lesson plan. The course will emphasize that chemical phenomena can be logically explained based on electronegativity, resonance, and the three-dimensional structure of compounds.
Notice	Organic chemistry is a discipline in which accumulation is significant, and knowledge of organic chemistry in the third year is essential for this lecture. Students are required to review and study the material.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Chapter 7: Substitution and Elimination Reactions of Alkyl Halides 1	Explain the SN2 reaction.
		2nd	Chapter 7: Substitution and Elimination Reactions of Alkyl Halides 2	Explain the SN1 reaction.
		3rd	Chapter 7: Substitution and Elimination Reactions of Alkyl Halides 3	Explain the E1 and E2 reaction
		4th	Chapter 7: Substitution and Elimination Reactions of Alkyl Halides 4	Explain the competition between substitution and elimination reactions.
		5th	Chapter 8: Reactions of Alcohols, Ethers, and Epoxides 1	Name alcohols according to IUPAC rules. Explain the alcohol substitution reactions.
		6th	Chapter 8: Reactions of Alcohols, Ethers, and Epoxides 2	Explain the synthesis, elimination, and oxidation reactions of alcohols.
		7th	Chapter 8: Reactions of Alcohols, Ethers, and Epoxides 3	Name ethers and epoxides according to IUPAC rules. Explain the ether and epoxide reactions.
		8th	Mid-term examination	
	2nd Quarter	9th	Return and explanation of mid-term examinations Chapter 11: Carbonyl Compounds I-1	Name aldehydes and ketones according to IUPAC rules. Explain the aldehyde and ketone structure and physical properties.
		10th	Chapter 11: Carbonyl Compounds I-2	Using reaction mechanisms, explain the reaction of aldehydes and ketones with hydrides, amines, water, and alcohols.

		11th	Chapter 11: Carbonyl Compounds I-3	Using reaction mechanisms, explain the reaction of aldehydes and ketones with hydrides, amines, water, and alcohols.
		12th	Chapter 11: Carbonyl Compounds I-4	Explain the Wittig reaction.
		13th	Chapter 10: Carbonyl Compounds II-1	Name carbonyl compounds according to IUPAC rules. Explain the carbonyl compound structure and physical properties.
		14th	Chapter 10: Carbonyl Compounds II-2	Explain the reaction of carboxylic acid derivatives.
		15th	Chapter 10: Carbonyl Compounds II-3	Using reaction mechanisms, explain acylation, esterification, and amidation reactions.
		16th	Return and explanation of final examination	

Evaluation Method and Weight (%)

	Examination	Quiz	Portfolio	Presentation and Attitude	Other	Total
Subtotal	70	0	0	0	30	100
Basic Proficiency	30	0	0	0	10	40
Specialized Proficiency	40	0	0	0	20	60
Cross Area Proficiency	0	0	0	0	0	0