3rd QuarterIntroduction to Natural PolymersCan explain natural polymers.3rdIntroduction to Synthetic PolymersCan explain synthetic polymers.4thPhysical Properties of Polymers 1Explain thermal and mechanical properties of polymers.5thPhysical Properties of Polymers 2Explain electrical and optical properties of polymers.6thSequential polymerization 1Explain the synthesis of polymers by polycondensation reactions.	Anan College		Year	Year 2024			urse ïtle	Polymer Chem	istry		
Class Format Lecture Course of Chemical Engineering Student Grade Sth Department Course of Chemical Engineering Student Grade Sth Textbook and/or Teaching Materials Instructor Otani Takashi Course Objectives Rubric Italian Student Standard Level (Basses per Week 後期:2 Instructor Otani Takashi Course Objectives Rubric Italian Standard Level Can explain the structure and synthesis of polymers and synthesis of polymers of polymers and synthesis of polymers and synthesis of polymers and synthesis of polymers and functionality of polymers and functionality of the structure and functionality of the synthesis of polymers and functionality of polymers and functionality of polymers and functionality of the explanet and synthesis of polymers and functionality and mechanical properties and functionality and functionality of polymers and functionality and functionality of the explanet and synthesis of polymers and functionality and mechanical properties and functionality and functionality and functionality and functionality and the polymers can be broadly classified into natural polymers, such as failers and functionality and properties. Style In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding. Notice Course Plan Intervention in Learning Attieve Learning Attieve Learning Attieve Learning Attieve Colomers Can explain synthesized as well as their types and properties. Style Intraduction to Natural Polymers Can explain natural polymers are, the birth and histor of polymers. Can explain antara polymers. Can explain synthesized as a can explain synthesized of polymers. Style Intraduction to Synthetic Polymers Can explain synthesize of polymers. Can explain antara polymers. Can explain antara polymers. Can explain synthesis of polymers are, the birth and histor of polymers. Style Physical Properties of Polymers 1 polymers. Style Physical Properties of Polymers 2 Explain theteratical and optical properties of polymers. Style Physical Properties o	Course Information										
Department     Course of Chemical Engineering     Student Grade     Sth       Term     Second Semester     Classes per Week     後期:2       Textbook and/or Teaching Materials     Ideal Level     Classes per Week     後期:2       Outrase Objectives     Ideal Level     Standard Level     Unacceptable Level       Rubric     Ideal Level     Standard Level     Unacceptable Level can explain the structure and polymers detail the types of polymers, their thernal and mechanical properties and functionality     Describe in detail the properties and functionality     Describe the types of polymers, their thernal and mechanical properties and functionality     Unable to describe in detail the types of polymers, their thernal and mechanical properties and functionality     Describe the types of polymers, their thernal and mechanical properties and functionality     Unable to describe in detail the types of polymers, their thernal and mechanical properties and functionality     Unable to describe in detail the types of polymers, their thernal and mechanical properties and functionality       Active mement 3     Delymers that be troady classified into natural polymers, such as fibers and foods found in nature, and synthetic polymers that exist around us are synthesized, as well as their types and polymers.       Outline     Polymers the transmanne. In this course, students will be conducted as needed to deepen understanding.     Intervent and mechanical properties.       Style <t< td=""><td>Course Code</td><td>1495A01</td><td></td><td></td><td>Course Categor</td><td>ry S</td><td>Specialized</td><td colspan="2">d / Elective</td></t<>	Course Code	1495A01			Course Categor	ry S	Specialized	d / Elective			
Term     Second Semester     Classes per Week     後期:2       Textbook and/or Teaching Materials     Otani Takashi     Course Objectives     Unacceptable Level       Rubric     Ideal Level     Standard Level     Unacceptable Level     Can explain the structure and synthesis of polymers     Unable to describe in detail the types of polymers, their thermal and mechanical properties and functionality     Describe the types of polymers, their thermal and mechanical properties and functionality     Unable to describe in detail the types of polymers, their thermal and mechanical properties and functionality       Achievement 3     Describe the types of polymers, their thermal and mechanical properties and functionality     Unable to describe in detail the types of polymers, their thermal and mechanical properties.       Style     Department Objectives     Pale D-1     Teaching Method       Outline     Polymers can be broadly classified into natural polymers, such as fibers and foods found in nature, and synthetic polymers, such as plastics and films synthesized by humans. In this course, students will kern he the polymer state star around us are synthesized, as well as their types and properties.       Style     In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding. <td>Class Format</td> <td>Lecture</td> <td></td> <td></td> <td>Credits</td> <td>ŀ</td> <td>Academic</td> <td>Credit: 2</td> <td></td>	Class Format	Lecture			Credits	ŀ	Academic	Credit: 2			
Textbook and/or Teaching Materials   Otani Takashi     Instructor   Otani Takashi     Course Objectives   Ideal Level     Rubric   Ideal Level     Achievement 1   Can explain in detail the structure and synthesis of polymers in detail the types of polymers, their thermal and functionality   Can explain the structure and synthesis of polymers     Achievement 2   Describe in detail the types of polymers, their thermal and functionality   Describe the types of polymers, their thermal and mechanical properties and functionality   Unable to describe in detail the types of polymers, their ther and mechanical properties and functionality     Achievement 3   Assigned Department Objectives   Standard Level   Unable to describe in detail the types of polymers, their ther and mechanical properties and functionality     Y = \% \$\% \$\% \$\% \$\% \$\% \$\% \$\% \$\% \$\%	Department Course of		Chemical Engineering		Student Grade	Student Grade 5th					
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学習・教育到達度目標 D-1     Teaching Method     Outline   Polymers can be broadly classified into natural polymers, such as fibers and foods found in nature, and synthetic polymers, such as plastics and films synthesized by humans. In this course, students will learn hot the polymers that exist around us are synthesized, as well as their types and properties.     Style   In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding.     Notice   Characteristics of Class / Division in Learning     Active Learning   Aided by ICT   Applicable to Remote Class   Instructor Professionally Experienced     Course Plan   Introduction Macromolecules around us   Explain what polymers.   Explain what polymers.     2nd   Introduction to Natural Polymers   Can explain natural polymers.   Explain interrate polymers.     3rd   Guarter   Sth   Physical Properties of Polymers 1   Explain thermal and mechanical properties of polymers.     5th   Physical Properties of Polymers 1   Explain interval and optical properties of polymers.   Explain the synthesis of polymers by polycondensation reactions.											
Teaching Method     Outline   Polymers can be broadly classified into natural polymers, such as fibers and foods found in nature, and synthetic polymers such as plastics and films synthesized by humans. In this course, students will learn he the polymers that exist around us are synthesized, as well as their types and properties.     Style   In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding.     Notice   In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding.     Notice   In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding.     Notice   Instructor Professionally     Characteristics of Class / Division in Learning   Instructor Professionally     Active Learning   Aided by ICT   Applicable to Remote Class   Instructor Professionally     Ecourse Plan   Introduction Macromolecules around us   Goals     1st   Introduction Macromolecules around us   Explain what polymers are, the birth and histor of polymer chemistry, the polymer industry, are the classification of polymers.     2nd   Introduction to Natural Polymers   Can explain natural polymers.     3rd   Introduction to Synthetic Polymers 1   Explain thermal and mechanical properties of polymers.     4th			jectives	ctives							
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Style   In addition to lectures based on textbooks and handouts, exercises and experiments will be conducted as needed to deepen understanding.     Notice   Characteristics of Class / Division in Learning   Instructor Professionally Experienced     Active Learning   Aided by ICT   Applicable to Remote Class   Instructor Professionally Experienced     Course Plan   Theme   Goals     1st   Introduction Macromolecules around us   Explain what polymers are, the birth and histor of polymer chemistry, the polymer industry, ar the classification of polymers.     2nd   Introduction to Natural Polymers   Can explain natural polymers.     3rd   Introduction to Synthetic Polymers 1   Explain thermal and mechanical properties of polymers.     4th   Physical Properties of Polymers 2   Explain thermal and optical properties of polymers.     5th   Physical properties of Polymers 2   Explain the synthesis of polymers by polycondensation reactions.	Outline	synthetic	: polymers, such a	s plastics and film	ns synthesized b	y huma	ns. In this	s course, students	ture, and s will learn how		
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Quarter     5th     Physical Properties of Polymers 2     Explain electrical and optical properties of polymers.       6th     Sequential polymerization 1     Explain the synthesis of polymers by polycondensation reactions.	3rd	4th F	h Physical Properties of Polymers 1			polyme	polymers.				
polycondensation reactions.		5th F	Physical Properties	al Properties of Polymers 2				and optical prope	erties of		
		6th S	Sequential polyme	merization 1			the synth densatior	esis of polymers reactions.	by		
7th     Sequential polymerization 2     Explain the synthesis of polymers by polyadditi reactions.		7th S	Sequential polyme	quential polymerization 2				esis of polymers	by polyaddition		
2nd Semeste8thSequential polymerization 3Explain the synthesis of Polymers by Addition- Condensation Polymerization Reaction.		8th S	Sequential polyme	quential polymerization 3			the synth sation Pol	esis of Polymers lymerization Read	by Addition- tion.		
r 9th Midterm examination Can fully explain what was taught in the first h of the course.	r	9th N	Midterm examinat	dterm examination							
10thRadical polymerization of vinyl monomersExplain the synthesis of polymers by polymerization and radical polymerization of vin monomers.		10th F	Radical polymeriza	adical polymerization of vinyl monomers				polymerization and radical polymerization of vinyl			
11th     Radical copolymerization     Explain the synthesis of polymers by radical copolymerization.		11th F	adical copolymerization								
4th Explain the synthesis of polymers by cationic and anionic polymerization   4th Explain the synthesis of polymers by cationic anionic polymerization.		12th (	ationic and anionic polymorization			Explain the synthesis of polymers by cationic and anionic polymerization.					
		13th F	Ring-opening poly	Explain the synthesis of polymers by ring-opening							
14thFunctional polymer 1Can explain functional polymers.		14th F	unctional polymer 1			<u>+</u> ,					
15th Functional polymer 2 Can synthesize functional polymers.		15th F	Functional polyme	Can synthesiz		nthesize fu					
16th	ļ	16th									
Evaluation Method and Weight (%)											
Examination Assignment Submission Submission Students Behavior Portfolio Other Total			Assignment	Evaluations between	Behavior	Portfol	lio	Other	Total		
Subtotal     70     30     0     0     0     0     100	Subtotal 70		30		0	0		0	100		

Basic Proficiency	25	20	0	0	0	0	45
Specialized Proficiency	35	10	0	0	0	0	45
Cross Area Proficiency	10	0	0	0	0	0	10