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Students will demonstrate their understanding of technical information in each subject area and be able to apply this knowledge in practical situations. They will be able to identify and describe the various components of a system and explain the function of each component. They will also be able to identify and describe the various types of data and explain the function of each type of data.

(K) To be able to identify and describe the various components of a system and explain the function of each component.

Students will be able to identify and describe the various components of a system and explain the function of each component. They will also be able to identify and describe the various types of data and explain the function of each type of data.

4. Objectives (Learning & Teaching Objectives)

To achieve the goals of this program, the basic academic abilities and knowledge in Liberal Arts and Sciences, as well as the ability to apply this knowledge in practical situations, are essential. This program is designed to provide students with the necessary knowledge and skills to succeed in the field of Liberal Arts and Sciences. The program is designed to provide students with the necessary knowledge and skills to succeed in the field of Liberal Arts and Sciences.

The following are the learning objectives for the Liberal Arts and Sciences program:

Subject as a core

1. To be able to identify and describe the various components of a system and explain the function of each component.

2. To be able to identify and describe the various types of data and explain the function of each type of data.

3. To be able to identify and describe the various types of data and explain the function of each type of data.

4. To be able to identify and describe the various types of data and explain the function of each type of data.

5. To be able to identify and describe the various types of data and explain the function of each type of data.

6. To be able to identify and describe the various types of data and explain the function of each type of data.

The following are the learning objectives for the Liberal Arts and Sciences program:

educational

subject and specialized

7. To be able to identify and describe the various components of a system and explain the function of each component.

8. To be able to identify and describe the various types of data and explain the function of each type of data.

9. To be able to identify and describe the various types of data and explain the function of each type of data.

and aims

10. To be able to identify and describe the various types of data and explain the function of each type of data.

11. To be able to identify and describe the various types of data and explain the function of each type of data.

Knowledge & Understanding

Basic knowledge of the liberal arts and sciences, as well as the ability to apply this knowledge in practical situations, are essential.

Students will be able to identify and describe the various components of a system and explain the function of each component.

Students will be able to identify and describe the various types of data and explain the function of each type of data.

Students will be able to identify and describe the various types of data and explain the function of each type of data.

Field of Study

as follows

"Basic"; specialized basic subjects as "Basic Organic Chemistry" and "Basic Inorganic Chemistry"; and specialized subjects in the 3rd and 4th years of the 2nd year and in the 3rd year as "Advanced Organic Chemistry" and "Inorganic Chemistry".

Advanced subjects in the 3rd and 4th years of the 2nd year and in the 3rd year as "Advanced Organic Chemistry" and "Inorganic Chemistry".

Advanced subjects in the 3rd and 4th years of the 2nd year and in the 3rd year as "Advanced Organic Chemistry" and "Inorganic Chemistry".

. Students will be able to identify and describe the various types of data and explain the function of each type of data.

Advanced subjects in the 3rd and 4th years of the 2nd year and in the 3rd year as "Advanced Organic Chemistry" and "Inorganic Chemistry".

Advanced subjects in the 3rd and 4th years of the 2nd year and in the 3rd year as "Advanced Organic Chemistry" and "Inorganic Chemistry".

To be eligible to teach general education courses, candidates must have earned a minimum of 16 credits in a field of study. For example, a candidate who has earned 16 credits in the field of Social Science would be eligible to teach Social Science courses. A candidate who has earned 16 credits in the field of Basic Subject (e.g., Basic English, Basic Chemistry) would be eligible to teach Basic Subject courses. ad

A (Sp: 80 – 89)	3
B (Gd: 70 – 79)	2
C (Fair 60 – 69)	1

* See the evaluation criteria Attached Sheet 2.

* See the evaluation criteria Attached Sheet 3.

* See the Curriculum Map Attached Sheet 4.

9. Gadatneis (gadatoe each) (i ad end & ta baig net.)

The Gadatoe is the subject the aim of this educational part below

- (Ka) To be able basic knowledge,
- (Ki) To be able to fill their role as a registered
- (Kj) To be able to create or and designability
- (Ke) To be able to identify a teacher & engineer high class - design
- (Kp) To be able to create and maintain

Detail of the goal as follows

- (1) Contact and learn and areas (indig he irEGL) about the given each here and detail the part and significance of the each. (Ka), (Ki), and (Kp)
- (2) Set out goals and design each part (Ka) and (Kj)
- (3) Analyze and consider based in the each part based on knowledge basic chemical and specialized techniques (Ka)
- (4) Understand the meaning of the goal and estimate the goal part (Ka), (Kj) and (Ke)
- (5) Consider the effect and impact of each technology, and being for the future process. (Ki)
- (6) Organize and describe each part (Ka) and (Kp)
- (7) Give areas - to detail of each part and process in detail (Kp)

Time for each part of the year (Target level of the credit is for each.)

Conditions of a gadatneis

- (1) That the total credit of the subject (indig epistimofaer) subject and have acquired eight credit of foreign language subject
- (2) That the total credit of 115 credit and at least 69 of the credit to be obtained in Specialized Basic Subject and Specialized Subject

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Required

	Credits	Applied Chemistry Biotechnology Chemical engineering	1st grade				2nd grade				4th grade			
			Fall				Fall				Spring			
			1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T
Applied Mathematics I	2			4										
Applied Mathematics II	2					4								
Applied Mathematics III	2										4			
Basic Engineering Computer Programming	2					4								
Probability and Statistics	2									4				
Technical English	1								4					
Basic Environmental Sciences	2			4										
Chemical Stoichiometry	2						4							
Basic Organic Chemistry I	2			4										
Basic Organic Chemistry II	2				4									
Physical Chemistry I	2						4							
Biochemistry I	2						4							
Basic Experiments in Chemistry	4								12	12				
Basic Inorganic Chemistry	2			4										
Analytical Chemistry	2						4							
Basic life science	2				4									
Introduction to Applied Chemistry, Chemical Engineering and Biotechnology	2								4					
Introduction to Fundamental Industry	2								4					

Cluster 3 Specialized subjects Program of Applied Chemistry

Required subjects
Compulsory Elective subjects

Class Subjects	Credits	Type of course registration	Class Hours/ Week																Note
			1st grade				2nd grade				3rd grade				4th grade				
			Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		
			1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	
Inorganic Chemistry	2											4							
Advanced Organic Chemistry I	2							4											
Exercises in Organic Chemistry	1													4					
Exercises in Physical Chemistry	1													4					
Advanced Organic Chemistry II	2																		
Physical Chemistry II	2							4											
Chemical Experiments I	4										12	12							
Chemical Experiments II	4												12	12					
Advanced Organic Chemistry III	2											4							
Quantum Chemistry I	2																		
Quantum Chemistry II	2											4							
Advanced Organic Chemistry IV	2													4					
Quantum Chemistry III	2													4					
Chemical Kinetics	2												4						
Organometallic Chemistry	2											4							
Organic Structural Analysis	2																4		
Catalysis Chemistry	2																	4	
Synthetic Polymer Chemistry	2																	4	
Physical Chemistry III	2												4						
Electrochemistry	2																	4	
Solid State Chemistry	2																	4	
Applied Inorganic Chemistry	1																	2	
Industrial Polymer Chemistry	2																	4	
Bioorganic Chemistry	2																	4	
Chemical Engineering Exercise I	2																	4	
Chemical Engineering Fundamentals	2																	2	
Green Technology	2																	4	
Recycling engineering	2																	4	
Engineering and ethics	2																	4	
Graduation Thesis	5																	1	

1 Intensive courses

Academic Achievements in Chemical Engineering

The Relationship between Evaluation Items and Evaluation Criteria

Academic achievements		Evaluation criteria		
Evaluation items		Excellent	Very Good	Good
Knowledge and Understanding	(1) Wide range of basic knowledge on liberal arts and specialized education, and professional basic knowledge on chemistry.	Acquiring the wide range of basic knowledge on liberal arts and specialized education, and professional basic knowledge on chemistry, and being able to explain them.	Acquiring the wide range of basic knowledge on liberal arts and specialized education, and professional basic knowledge on chemistry.	Acquiring the outline of wide range of basic knowledge on liberal arts and specialized education, and professional basic knowledge on chemistry.
	(2) Advanced technical knowledge of applied chemistry.	Acquiring the advanced technical knowledge of applied chemistry and being able to explain it.	Acquiring advanced technical knowledge of applied chemistry.	Acquiring the outlines of advanced technical knowledge of applied chemistry.
	(3) The conception ability based on logical thinking supported by basic and technical knowledge.	Acquiring the conception ability based on logical thinking supported by basic and technical knowledge and being able to explain them.	Acquiring the conception ability based on logical thinking supported by basic and technical knowledge.	Acquiring the outline of conception ability based on logical thinking supported by basic and technical knowledge.
Abilities and Skills	(1) The quality to be able to understand technologies and their social effects, and to fulfill the responsibility as researchers engineers to contribute to society.	Acquiring the quality to be able to understand technologies and their social effects, and fulfill the responsibility as researchers engineers to contribute to society. Being able to explain them.	Acquiring the quality to be able to understand technologies and their social effects, and fulfill the responsibility as researchers engineers to contribute to society.	Acquiring the outline of the quality to be able to understand technologies and their social effects, and fulfill the responsibility as researchers engineers to contribute to society.
	(2) The knowledge on economy, safety and reliability of technologies, and the judgment ability to utilize them from global point of view.	Acquiring the knowledge on economy, safety and reliability of technologies and the judgment ability to utilize them from global point of view, and being able to explain them.	Acquiring the knowledge on economy, safety and reliability of technologies and the judgment ability to utilize them from global point of view.	Acquiring the outline of the knowledge on economy, safety and reliability of technologies and the judgment ability to utilize them from global point of view.
	(3) Creativity to solve various problems related to applied chemistry utilizing acquired knowledge and skills	Acquiring the creativity to solve various problems related to applied chemistry utilizing acquired knowledge and skills, and to be able to explain it.	Acquiring the creativity to solve various problems related to applied chemistry utilizing acquired knowledge and skills.	Acquiring the outline of the creativity to solve various problems related to applied chemistry utilizing acquired knowledge and skills.
	(4) Socially acceptable sense of moral and designing ability of research and development, which allow demonstrating the ability to solve issues as a researcher engineer.	Acquiring the socially acceptable sense of moral and designing ability of research and development, which allow demonstrating the ability to solve issues as a researcher engineer, and to be able to explain them.	Acquiring the socially acceptable sense of moral and designing ability of research and development, which allow demonstrating the ability to solve issues as a researcher engineer.	Acquiring the outline of the socially acceptable sense of moral and designing ability of research and development, which allow demonstrating the ability to solve issues as a researcher engineer.
Comprehensive Abilities	(1) Self-motivating and continuous learning ability	Acquiring self-motivating and continuous learning ability and to be able to explain it.	Acquiring self-motivating and continuous learning ability.	Acquiring the outline of self-motivating and continuous learning ability.
	(2) Attitudes actively trying to take multiple approaches for solving problems as an independent researcher or engineer utilizing the following items: information collection, skill improvement, development of research methods, analysis and understanding of	Acquiring attitudes actively trying to take multiple approaches for solving problems as an independent researcher or engineer utilizing the following items: information collection, skill improvement, development of research methods, analysis and understanding of research outcomes and results. Also, to be able to explain these items.	Acquiring attitudes actively trying to take multiple approaches for solving problems as an independent researcher or engineer utilizing the following items: information collection, skill improvement, development of research methods, analysis and understanding of research outcomes and results.	Acquiring the outline of attitudes actively trying to take multiple approaches for solving problems as an independent researcher or engineer utilizing the following items: information collection, skill improvement, development of research methods, analysis and understanding of research outcomes and results.
	(3) Abilities for logical description, presentation, and discussion in Japanese language.	Acquiring the abilities for logical description, presentation, and discussion in Japanese language, and to be able to explain these abilities.	Acquiring the abilities for logical description, presentation, and discussion in Japanese language.	Acquiring the outline of abilities for logical description, presentation, and discussion in Japanese language.
	(4) Ability to collect and send information from international views.	Acquiring the ability to collect and send information from international views and being able to explain that	Acquiring the ability to collect and send information from international views.	Acquiring the outline of ability to collect and send information from international views.
	(5) International sense to deal with problems from global perspectives.	Acquiring the international sense to deal with problems from global perspectives and being able to explain it	Acquiring the international sense to deal with problems from global perspectives.	Acquiring the outline of international sense to deal with problems from global perspectives.

Placement of the Liberal Arts Education in the Major Program

Liberal arts education in this Program creates the academic foundations for a specialized education, encourages a self-motivating and independent attitude, cultivates scientific thinking based on the ability to gather information-analytical capacity-critical thinking, establishes a viewpoint to give a deep insight into the nature and background of things from a broad perspective, strengthens students' language skills and their interest in peace suitable for living as an international person, integrates students' extensive knowledge into a

