

For entrants in AY 2023

Appended Form 1

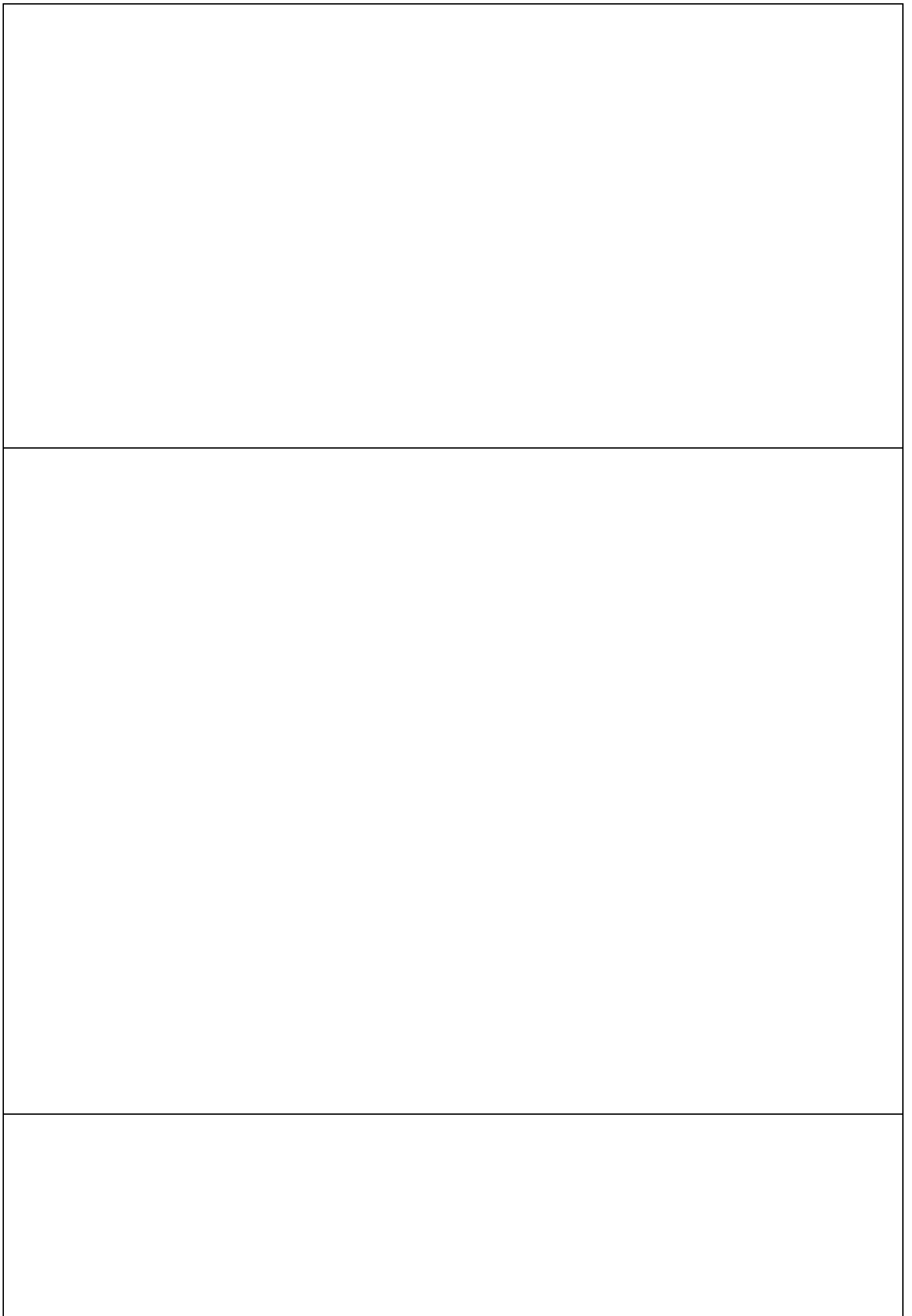
Specifications for Major Program

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	化学工学プログラム

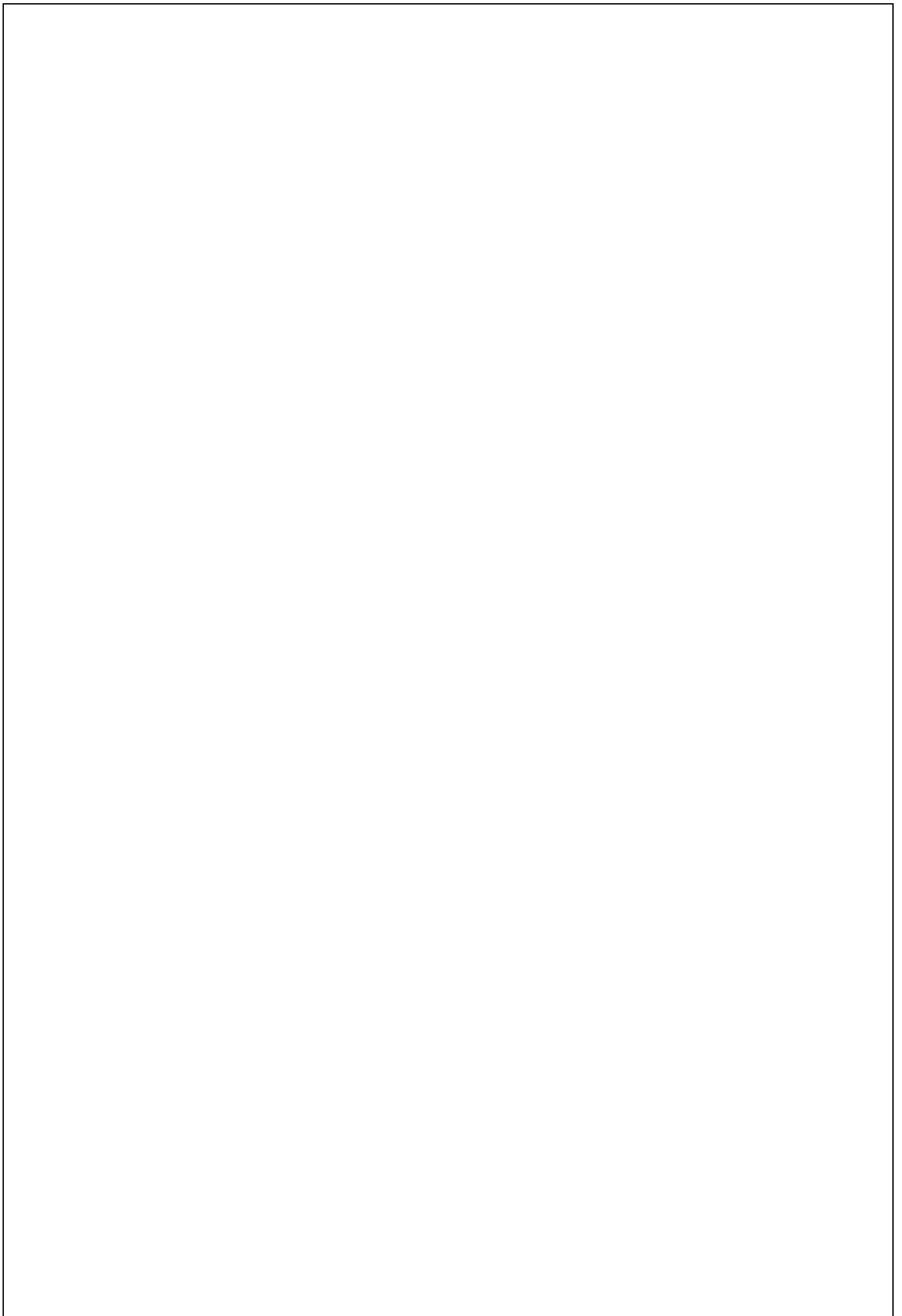


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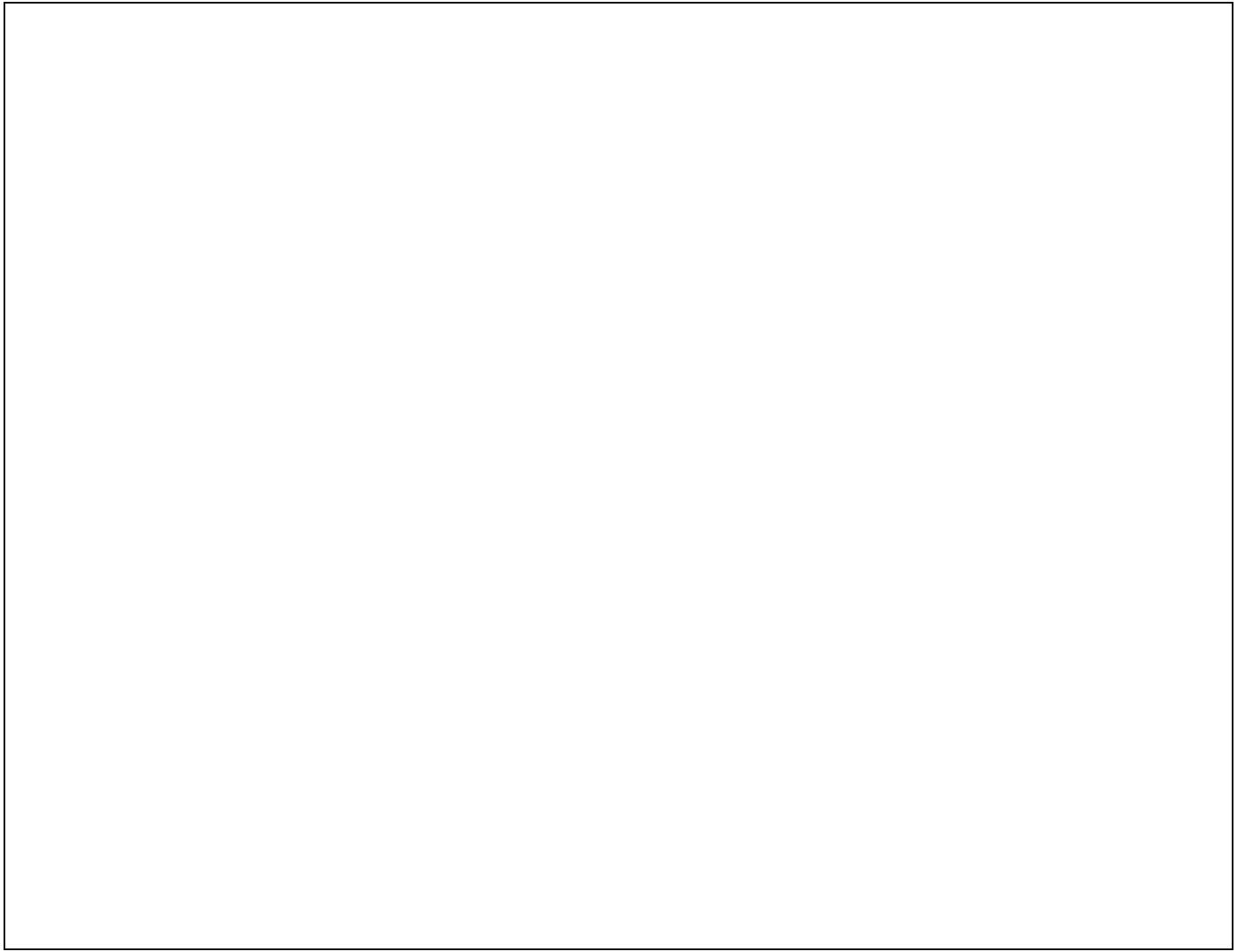
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Cluster 3 Specialized Basic Subjects

Required

Class Subjects	Credits	Type of course registration			Class Hours/ Week																note
		Applied Chemistry	Biotechnology	Chemical engineering	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	
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											

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	(A) To improve multiple thinking ability and understanding of relations among human, society, nature, and engineering.	Sufficient understanding of relations among human, society, nature, and engineering. Acquiring sufficient thinking ability with multiple perspectives.	Good understanding relations among human, society, nature, and engineering deeply. Acquiring thinking ability with multiple perspectives.	Understanding relations among human, society, nature, and engineering.
	(B) Development of logical thinking ability	Acquiring an excellent logical thinking ability.	Acquiring a good logical thinking ability .	Acquiring a logical thinking ability.
Abilities and Skills	(C1) Definite learning of basic chemistry and chemical engineering and cultivation of engineering basis.	Sufficiently learned basic chemistry and chemical engineering and the applied skills.	Learned basic chemistry and chemical engineering.	Well learned basic chemistry and chemical engineering and the applied skills.
	(C2) chemical engineering basis			
	(C3) chemical basis.			
	(C4) chemical engineering field			
	(C5) chemical engineering application			
Overall Abilities	(D) Developing the flexible adapting ability and creativity and cultivating motivation for self-development and self-improvement	Acquiring excellent flexibility and creativity; also to have a willingness for self-improvement and self-enlightenment.	Acquiring good flexibility and creativity; also to have a willingness for self-improvement and self-enlightenment.	Acquiring flexibility and creativity; also to have a willingness for self-improvement and self-enlightenment.
	(E) Improvement of presentation and communication ability and cultivation of application ability to high informatization.	Developed presentation and communication ability very well. Acquired application ability to high informatization very well.	Developed presentation and communication ability well. Acquired application ability to high informatization well.	Developed presentation and communication ability. Acquired application ability to high informatization.

Placement of the Liberal Arts Education in the Major Program

Liberal Arts Education in this program assumes the role of establishing the academic foundation on which the specialized education will be built. It respects a voluntary, self-reliant attitude and cultivates scientific thinking based on information gathering abilities, analytical abilities, and critical thinking abilities. It establishes perspectives that make it possible to provide insight on the inner nature of things and their background from a wide broad viewpoint, and enhances linguistic abilities to the level appropriate for living as a global citizen. It also strengthens interest in peace, and integrates a broad range of knowledge into a body of knowledge that will be truly useful in solving problems. It cultivates the ability to explore and promote cross-disciplinary /comprehensive research that goes beyond the established frameworks.

Subject type	Class subjects	credits	Type of course registration	Period	Evaluation items																Total weighted values of evaluation items in the subject				
					Knowledge and Understanding				Abilities and Skills										Comprehensive Abilities						
					(A)		(B)		(C1)		(C2)		(C3)		(C4)		(C5)		(D)	(E)					
					Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject	Weighted values of evaluation items in the subject					
Specialized Education	Chemical Process and Engineering Ethics	2	Required		40	4								20	2	40	4							100	
Specialized Education	Chemical Industrial Process	2	Elective		20	2							20	2	20	2	40	4							100
Specialized Education	Corrosion and Protection of Materials	2	Elective										100	10											100
Specialized Education	Green Technology	2	Elective		50	5		20	2					30	3										100
Specialized Education	Recycling Engineering	2	Required		50	5		20	2					30	3										100
Specialized Education	Inorganic Chemistry	2	Elective								100	10													100
Specialized Education	Physical Chemistry II	2	Required							100	10														100
Specialized Education	Chemical Kinetics	2	Elective								100	10													100
Specialized Education	Synthetic Polymer Chemistry	2	Elective								100	10													100
Specialized Education	Electrochemistry	2	Elective								100	10													100
Specialized Education	Biochemistry II	2	Elective								100	10													100
Specialized Education	Fermentation Technology	2	Elective								100	10													100
Specialized Education	Biototechnology	2	Elective								100	10													100
Specialized Education	Graduation Thesis	5	Required		10	1										20	1	50	5	20	2				100

