For entrants in AY 2019

Appended Form 1

Specifications for Major Program

Name of School (Program) School of Engineering Cluster 2(Electrical, Electronic and Systems Engineering)

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Program name	(Japanese)				
	(English)	Program of Electronic Devices and S	ystems	 	
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1.Academic Degree to be Acquired

2. Overview

(1)

This program aims to foster and produce future members of a global society who have the knowledge to be innovative, creative, take leadership, and possess language abilities that will help them play an important role in the international world.

This program focuses specifically on producing individuals who are capable of addressing various global issues from an engineering perspective and contribute to the creation of new and valuable solutions that are significant to both the industrial and academic societies.

Students enrolled in the program will begin the curriculum from the first semester of their first year.

In the second year, students will set off on their major programs and take the designated courses which are offered at each cluster. Major program overview is as (2).

(2) Program of Electronic Devices and Systems

In the fields of electricity, electronics, systems, information, and in other related fields, technological innovation has been advancing rapidly. We are now in a situation where innovative technology, ideas, and theories are being produced not only by deepening expert knowledge in a specific area, but by combining expert knowledge from multiple fields. As the impact of such technology on society is getting greater, it is always necessary to keep in mind the relationship between humankind, society, and nature.

On the basis of these social trends, Cluster 2 in the School of Engineering (electricity, electronics, systems, and information) has prepared the following programs with the aim of developing professionals who have a wide range of perspectives and insights, a sense of responsibility, and an ethical outlook, as well as specialized technological, problem-analyzing, and problem-solving abilities.

The Program of Electronic Devices and Systems

The Program of Electrical Systems and Information Engineering

Except for in exceptional circumstances, students who are enrolled in Cluster 2 in the School of Engineering (Electrical, Electronic and Systems Engineering) can choose this program from the above two options at the start of the second year, after going through liberal arts education and specialized education for one year after enrollment.

In the Program of Electronic Devices and Systems, students study electronic engineering centering on semiconductor devices such as integrated circuits.

Semiconductor device technology is one of the central technologies that supports modern society, in which computerization and informatization have been advancing. Today we use a number of devices and types of equipment in daily life and at work, such as audio and video equipment (TVs, video players, etc.) information processing and communication equipment (computers, the internet, mobile phones, etc.), transportation equipment (automobiles), electric home appliances (cooking devices, etc.), medical equipment, manufacturing equipment used in factories, etc., most of which is capable of complicated processing through simple operations using semiconductor devices. In medical and nursing care equipment, and in robots working at disaster sites, which are expected to become increasingly important in the years to come, operability that can achieve complex movement is more necessary than ever. Therefore, the ability to detect the situation using high performance and high functioning sensors, together with complex information processing using integrated circuits, is indispensable. Furthermore, the

realization of judgment processing using artificial intelligence is eagerly awaited.

Meanwhile, considering the energy issues and global environmental problems that are expected to become serious in the future, electronic engineering technology centering on semiconductor devices has a major role to play in resolving many challenges. In order to reduce wasteful energy consumption by the efficient operation of various equipment, the utilization of semiconductor devices, not least solar cells, which are semiconductor devices that generate energy, is absolutely necessary. Needless to say, new technology to reduce energy consumption by semiconductor devices themselves is also necessary.

To respond to such needs, it is necessary to refine current semiconductor technology through the introduction of new materials and new operating principles, and to develop technology that incorporates other fields. In order to develop professionals who have systematic knowledge and the ability to develop innovative technology, and who can play a central role in solving such challenges, this program offers a curriculum in which students can learn systematically and extensively, from basic knowledge such as quantum physics and basic semiconductor physics, to the latest research such as high performance electronic devices in nanometer size and high-functioning integrated circuit systems.

The following are the characteristics of the Program of Electronic Devices and Systems.

- (1) Class subjects are arranged to make it possible for students to learn in order the subjects related to each of the fields, physics and materials, semiconductor devices, and integrated systems. Class subjects are also arranged so that the association of subjects in each field is taken into consideration.
- (2) Entry-level subjects and introductory subjects in each field (Introduction to Physical Electronics, Introduction to Semiconductor Devices and Circuits) have been prepared for the second year. Consideration has been given to ensuring that students can see the whole picture in the specialized subject groups that they study. On the other hand, a variety of specialized subjects, including the most advanced science and technology, are offered in the second semester of the third year.
- (3) Subjects concerning physics and solid state physics, which form basis of materials and semiconductor devices, have been designed so that students can learn the basic principles necessary for innovative technological development. Students can also systematically learn the design engineering of integrated circuits from the basics of electrical and electronic circuits to the latest integrated circuits.
- (4) This program focuses on acquisition of knowledge, and technical and research ability, in relation to actual

research have been set, such as the manufacture of functional materials, the evaluation of physical properties, the manufacture of new functional devices and semiconductor devices in nanometer size, algorithms utilizable in actual systems, and the design and prototype of integrated circuits.

- (5) In collaboration with other programs, students can learn subjects concerning electric energy, electronic control, signal processing, and software.
- 3. Academic Awards Policy (Goals of the Program and Policy for Awarding Degrees)

The Program of Electronic Devices and Systems offers an education that emphasizes the field of physical properties and materials, which forms the basis for new devices, the field of high performance semiconductor devices in nanometer size, and the field of integrated systems, centering on high performance integrated circuits. By providing both the basic concepts and cutting edge knowledge in each field, and by identifying the mutual relationships between the fields in a systematic manner, this program aims at developing professionals who can take the lead in engineering development in the electronic engineering field and who have the ability to develop innovative technology by fusing together the different fields, which will be of growing importance in the future.

Specifically, this program offers education aimed at cultivating a broad range of general knowledge, an international perspective which aspires to peace, a general sense of judgment, and a well-rounded character.

eering to students who, in addition to the number of credits necessary to meet the standard of the course, have acquired the liberal arts education and specialized education necessary to prepare them for achieving the following goals:

Goal A Acquisition of the ability to recognize the relationship between science and technology, and humankind, society, and the natural environment, from various perspectives, and the ability to understand the responsibilities engineers have for society.

- Goal B Acquisition of the basic knowledge commonly required in the field of electronic systems and the abilities applicable to the field.
- Goal C Acquisition of the ability to analyze given challenges by using expertise, and draw solutions that meet the requirements of society.
- Goal D Acquisition of the ability to draw up plans and measures to resolve challenges, and the will to carry these measures out.
 - Goal E Acquisition of the ability to gather information and to communicate in Japanese and English. Acquis

The ability to organize research results and write logically, including regarding the significance and validity of the obtained outcomes, and to present these research outcomes and discuss them verbally and in an easy-to-understand manner (Goal E). This is obtaine fourth year.

The teamwork, leadership, and communication abilities needed to work in a group (Goal E). These are obtained

during the period from the second year through the third year.

The ability to take an approach to solving various problems after understanding that such problems that exist in humankind, society, and among individuals can be interpreted in various ways depending on social conditions,

The ability to read, write, converse, and retrieve information in the English language necessary for conducting

5. Program Timing and Acceptance Conditions

At the beginning of The English-

Enrollment in Program of Electronic Devices and Systems occurs in the second year. Students are assigned to this program based on consideration of their request and academic results. In order to be assigned to this program, students must acquire a total of 34 or more credits in liberal arts education subjects and specialized education subjects by the end of the first year.

6. Qualifications to be Acquired

By mastering the predetermined courses, students can obtain Type-1 High School Teaching License (Industry). Besides that, by mastering the predetermined class subjects, students are exempted from the examination subjects of the national exams for electrical chief engineers, chief telecommunications engineers and technical radio operators. The details are given in student handbook.

- 7. Class subjects and course content
- * For class subjects, see the course list table on the attached sheet.
- * For course content, see the syllabus for each academic year.
- * All courses are taught in Japanese. Course materials may be written in both Japanese and English or only English.

8. Academic Achievements

At the end of each semester, the evaluation criteria are applied to each evaluation item of academic achievement

current semester is given in one of three

calculated by adding the weighted values to the numerically-converted values of their academic achievements (S = 4, A = 3, B = 2, and C= 1) in each subject being evaluated.

Evaluation of academic	Converted
achievement	values
S(Excellent: 90 points or higher)	
A(Superior:80-89 points)	
B(Good: 70-79 points)	
C(Fair: 60-69 points)	1

Academic achievement	Evaluation						
	criteria						
Excellent	3.00 4.00						
Very Good	2.00 2.99						
Good	1.00 1.99						

- * See the relationship between evaluation items and evaluation criteria in the attached sheet 2.
- * See the relationship between evaluation items and class subjects in the attached sheet 3.
- * See the curriculum map in the attached sheet 4.

9. Graduation Thesis (Graduation Research) (Positioning, When and how to be assigned, etc.)

Graduation work aims at imparting general research skills by conducting research in line with the research agenda established for each student. The following are more concrete goals:

- 1. The acquisition of the ability to make a research plan based on the research agenda and execute the research in accordance with the plan
- 2. The acquisition of the ability to collect materials related to the research agenda, demonstrate a deep understanding of the research agenda, and identify problems
- 3. The acquisition of the ability to analyze the problems in the research agenda and reach solutions in accordance with the requirements of society
- 4. The acquisition of the ability to read, write, converse, and retrieve information in the English language necessary for conducting research
- 5. The acquisition of the ability to organize research results and write in coherent sentences the significance and validity of the obtained outcomes
- 6. The acquisition of the ability to present the research outcomes and discuss them verbally in an easy-to-understand manner

The requirements for embarking on a graduation thesis are as described in student handbook.

Students in the fourth year or over, who satisfy the requirements for embarking on a graduation thesis, are to be assigned as requested. How adjustments are made in relation to assignment is explained to the applicable students at a briefing held in advance. A briefing session about research topics or an open laboratory is held around the time from February to April for students who are to be assigned to the research laboratory and to the program.

10. Responsibility System

This program is operated by teachers who support the Program of Electronic Devices and Systems, however, the program targets students who belong to Cluster 2 and, therefore, the person responsible for executing the program is the Cluster 2 leader. Planning, implementing, evaluation, and handling are discussed mainly in the Cluster 2 Education Program committee and in the Cluster 2 committee (held, in principle, on the first Wednesday of every month) in an appropriate manner. Depending on the situation or content, a working group is established at the instruction of the Cluster leader to focus in the issues at hand.

achievement results.

For re-examining the program structure, the reasons for and the purposes of re-examination are given on the website.

Cluster 2 (Electrical, Electronic and Systems Engineering)

- Required subject (period of registration specified)
- O Compulsory elective subject (any of these subjects shall be registered)
- \triangle Free elective subject (any of these subjects shall be registered)

					Require			Type of	Yea				re subj subject											1)
	Subject Type			ne	d No. of	Class subjects, etc.	No. of	course		1st grade					rad			Brd (rad	
,,					credits		credits	registra					Spring F			Fall Spring F 4T 1T 2T					Spr			
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					2	Introduction to University Education	2	ory elective Required	0															
	Basic ourses niversi ducatic	Uni [.] Intr	versity oducto	on to Education ory Seminar ear	2	Introductory Seminar for First-Year Students	2	Required	0															
	ЗЭ́ш	for F	First-Y	ear	4	Courses in Arts and Humanities/Social Sciences			0		0													
	Area Courses				-		2	Compuls ory elective			0	_												
					4	Courses in Natural Sciences	2	erective		0		0												
				Basic English	2	Basic English Usagel	1	Required	0	0														
				Usage		Basic English Usagell	1				0	0												
	S	ages	Engli sh	Communica	2	Communication I A	1	Required	0	0														
	ıbject	3ngus	(Note2 •3)	tion I	_	Communication IB	1	rtequii eu	0	0														
	Common Subjects	Foreign Languages	Communic	Communica	2	Communication IIA	1	Required			0	0												
gts	Comn	Fore		tion II	_	Communication IIB	1	rvedan ea			0	0												
Subje			(Select or	reign Languages le language from		1 subjects from Basic language I	1	Compuls	0															
ation	German, French, Spanish, Russian, Chinese, Korean and Arabic) Information Subjects		2	1 subjects from Basic language II	1	ory elective		0																
Arts Education Subjects			2	(Note 4) Elements of Information Literacy or Exercise in Information Literacy	2	Compuls ory elective		0																
Liberal A		Hea	lth an	d Sports Cou	2		1or2	Compuls ory elective	0	0	0	0												
Lib						Calculusi	2			0														
						CalculusII	2					0												
						Linear Algebral	2		0															
						Linear Algebrall	2				0													
		Basi	c Subj	ects	16	Seminar in Basic Mathematics I	1	Required		0														
		_ 401	o oubj			Seminar in Basic Mathematics II	1					0												
						General Mechanics I	2		0															
						General Mechanics II	2				0													
						Experimental Methods and Laboratory Work in Physics I (Note 5)	1				0													
						Experimental Methods and Laboratory Work in Physics II (Note 5)	1					0												
				ubjects	6	From all Subject Type (Note 6)		Free elective	Δ	Δ	\triangle	Δ												
	No. of		dits r aduatio	equired for on	48																			

- Note 1: When students fail to acquire the credit during the term or semester marked with ⊚, ○, △ in the boxes for the year in which the course is taken, they can take the course in subsequent terms or semesters. Depending on class subject, courses may be offered in semesters or terms different from those scheduled. Please be sure to check the time schedule for Liberal Arts
- Note 2: The credit obtained by mastery of "English-speaking Countries Field Research" or self-directed study of "Online Seminar in English A·B" cannot be counted towards the credit necessary for graduation. The credit obtained by Overseas Language Training can be recognized as Communication I or II if application is made in advance. For more details, please refer to the article on English in Liberal Arts Education in the student handbook.
- Note 3: We have a recognition of credit system for foreign language proficiency tests. For more details, please refer to the article on English in Liberal Arts Education in the student handbook.
- Note 4: Students must take "Elements of Information Literacy" provided in the first semester. You can take the "Exercise in Information Literacy" provided in the second semester only if you fail to obtain credit for "Information Utilization Basics."
- Note 5: Students must take both [Experimental Methods and Laboratory WorkI(1credit)] and [Experimental Methods and Laboratory WorkII(1credit)].
- Note 6: You should take subjects from fields other than the Natural Science field. Credits that have been obtained by taking Communication Basics can be included in this subject type.

Cluster 2 Basic Specialized Subjects

© Required subject

○Compulsory elective subje

△Free elective subject

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		ystems ar	vices ar Systen	18	st g	grao	de	2	nd (grad	le	3	rd g	grad	le	4t	th 8	gra	de		
Class Subjects	Credits	Electrical, Systems and Information Engineering	Electronic Devices and Systems	Spr	Spring		Fall		Spring		Fall		ring	F	all	Spring		Fall		Note	
		_ H	Elec	1T	2T	3Т	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	ЗТ	4T		
Applied Mathematics I	2	0	0			4															
Applied Mathematics II	2	0	0					4													
Applied Mathematics III	2	0	0						4												
Discrete Mathematics I	2	0							4											(School of Informatics and Data Science)	
Synthesis of Applied Mathematics	2	0	0							4											
Engineering Mathematics A	2	Δ										4									
Engineering Mathematics C	2	Δ	0								4										
Probability and Statistics	2	0	Δ					4													
Technical English	1	0	0											4							
Introduction to Energy and Information Systems	2	0	0				4														
Electric Circuit Theory I	2	0	0			4															
Programming I	2	0	0					2	2												
Programming II	2	0	0							2	2										
Programming III	2	Δ										2	2							(School of Informatics and Data Science)	
Basic Experiments in Electrical Engineering I	2	0	0					10	10											take classes at one of the terms	
Basic Experiments in Electrical Engineering II	2	0	0							10	10									take classes at one of the terms	
Experiments in Electrical Engineering Electronics and System Engineering I	2	0	0									10	10							take classes at one of the terms	
Experiments in Electrical Engineering Electronics and System Engineering II	2	0	0											10	10					take classes at one of the terms	

Cluster 2 Specialized Subjects

(Program of Electronic Devices and Systems)

									Clas	s Ho	urs/V		ree	e e.	rec.	t 1 v	e s	ub.J	ect
	lits	of se	Class Hours/Week 2 1st grade 2nd grade 3rd grade 4th grade												е				
Class Subjects	Credits	Type of course	Spr	ing				ing			Spring					ing		all	Note
	0	`	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	
Electromagnetism I	2	0					4												
Electromagnetism II	2	0							4										
Exercise of Electromagnetism I	1	0					2												
Exercise of Electromagnetism II	1	0							2										
Electromagnetic Wave Propagation	2	\bigcirc										4							
Introduction to Physical Electronics	2	0						4											
Quantum Mechanics	2	0								4									
Thermodynamics and Statistical Mechanics	2	\bigcirc										4							
Solid State Physics	2	\bigcirc										4							
Surface Science and Nanotechnology	2	\bigcirc												4					
Introduction to Semiconductor Devices and Circuits	2	0						4											
Solid State Physics	2	0								4									
Semiconductor Device Engineering	2	\bigcirc									4								
Optoelectronic Semiconductor Devices	2	\bigcirc											4						
Electronic Material Engineering	2	\bigcirc												4					
Electric and Electronic Measurements	2	\bigcirc									4								
Electric Transient Phenomena	2	\bigcirc							4										
Logic System Design	2	0					4												
CMOS Logic Circuit Design	2	\bigcirc									4								
Semiconductor Process Engineering	2	\bigcirc											4						
CMOS Integrated Design	2	\bigcirc												4					
Circuit Theory II	2	\bigcirc						4											
Electronic Circuits	2	0								4									
Electric Energy Generation and Conversion	2	\triangle								4									
Fundamentals of Power Systems	2	\triangle									4								
Control Systems Engineering I	2	\triangle						4											
Control Systems Engineering II	2	\triangle								4									
Signal Processing Engineering	2	Δ									4								
Bioelectrical Engineering	2	Δ										4							
Robotics	2	Δ											4						
Communication Engineering	2	\triangle											4						
Digital Circuit Design	2	\triangle							4										(School of Informatics and Data Science)
Computer Architecture	2	\triangle								4									(School of Informatics and Data Science)
Databases	2	\triangle								4									(School of Informatics and Data Science)
Computer Network	2	Δ												4					(School of Informatics and Data Science)
Algorithms and Data Structures	2	\triangle							4										(School of Informatics and Data Science)
Human Computer Interaction	2	\triangle											4						(School of Informatics and Data Science)
Graduation Thesis	5	0																	

		Academic Achievements	Evaluation Criteria									
		Evaluation Items	Excellent	Very Good	Good							
ing	(1)	The ethics and understanding about the relations between society and technology considered basically necessary for engineers.	Sufficiently understand relations between society and technology, and be able to behave with a sufficient sense of ethics.	Understand relations between society and technology at the standard level, and be able to behave with a standard sense of ethics.	Marginally understand relations between society and technology, and be able to behave with a minimum sense of ethics.							
Knowledge/Understanding	(2)	Basic knowledge of mathematics such as calculus and linear algebra, which is required for scientists/engineers.	Acquire and be able to utilize sufficient basic knowledge of mathematics such as calculus and linear algebra.	Acquire and be able to utilize standard basic knowledge of mathematics such as calculus and linear algebra.	Acquire and be able to utilize minimum basic knowledge of mathematics such as calculus and linear algebra.							
owledge/U	(3)	Basic knowledge of theories and experimental methods of physics, which is required for scientists/engineers.	Acquire and be able to utilize sufficient basic knowledge of theories and experimental methods of physics.	Acquire and be able to utilize standard basic knowledge of theories and experimental methods of physics.	Acquire and be able to utilize minimum basic knowledge of theories and experimental methods of physics.							
Kn	(4)	Comprehensive understanding and knowledge of technologies in electronics engineering. Also, basic knowledge which is common in these fields.	Sufficiently acquire and be able to utilize general, common and basic knowledge of electronics engineering.	Acquire and be able to utilize general, common and basic knowledge of electronics engineering, at the standard level.	Marginally acquire and be able to utilize general, common and basic knowledge of electronics engineering.							
	(1)	Mathematical methods required for professionals in electronics engineering.	Sufficiently acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering.	Acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering, at the standard level.	Marginally acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering.							
ls	(2)	Concepts, knowledge and methods which are the basis for studies related to electronic engineering.	Sufficiently acquire and be able to utilize concepts, knowledge and methods which are the basis for studies related to electronics engineering.	Aquire and be able to utilize concepts, knowledge and methods of electronics engineering, at the standard level.	Marginally acquire and be able to utilize concepts, knowledge and methods which are the basis for studies related to electronics engineering.							
Abilities/Skills	(3)	Ability to apply basic concepts, knowledge, and methods of electronics engineering to concrete/technical problems.	Acquire and be able to utilize sufficient abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems.	Acquire and be able to utilize standard abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems.	Acquire and be able to utilize marginal abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems.							
Al	(4)	Ability to solve practical issues and problems by conducting experiments, using numerical computation methods, and collecting relevant materials.	Acquire and be able to utilize sufficient abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials.	Acquire and be able to utilize standard abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials.	Acquire and be able to utilize marginal abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials.							
	(5)	Ability to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods.	Acquire and be able to utilize sufficient abilities to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods.	Acquire and be able to utilize standard abilities to solve practitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods.	Acquire and be able to utilize marginal abilities t solve practical issues and problems by voluntaril making a plan, revising it, and utilizing basic and technical knowledge and methods.							
	(1)	Creative thinking ability and logical thinking skills to analyze practical problems and tasks, and to lead to rational solutions satisfying social needs, as well as technical development skills to physically realize the solutions.	Sufficiently acquire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions.	Aqcuire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions, at the standard level.	Marginally acquire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions.							
Abilities	(2)	Skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions.	Acquire and be able to utilize sufficient skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions.	Acquire and be able to utilize standard skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions.	Acquire and be able to utilize marginal skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions.							
Comprehensive Abilities	(3)	Teamwork, leadership and communication skills in group works.	Sufficiently acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works.	Acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works, at the standard level.	Marginally acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works.							
Con	(4)	Ability to understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve.	Sufficiently acquire and utilize skills to fully understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve.	Acquire and utilize skills at the standard level to understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve.	Marginally acquire and utilize skills to minimally understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve.							
	(5)	Ability of English conversation, reading and writing skills necessary for research accomplishment.	Sufficiently acquire and be able to utilize the ability of English conversation, reading and writing skills necessary for engineers.	Acquire and be able to utilize the ability of English conversation, reading and writing skills necessary for engineers, at the standard level.								

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 for Cluster 2 in the School of Engineering is built. It fosters a willing, self-reliant attitude



