Appended Form 1

Specifications for Major Program

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

Program name (Japanese) (English)	 Program of Electrical, Systems and Information Engineering
1　Academic degree to be acquired: Bachelor's degree in engineering	

2. Overview

(1)

Basic knowledge of mathematics, such as differential and integral calculus, and linear algebra, required by scientists and engineers (Goal B). This is obtained through mastery of such fundamental subjects as “Calculus” to be offered in the first year.

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)

Students qualify as electrical chief engineers and engineers for architectural equipment after having hands-on experience for some years after graduation. 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 to clearly demonstrate the level of attainment. Students' grade calculation for each subject from admission to the current semester is given in one of three levels: "Excellent," "Very Good," and "Good," based on evaluation criteria 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 achievement	Converted values
S (Excellent: 90 points or higher)	4
A (Superior: 80-89 points)	3
B (Good: 70-79 points)	2
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.)

○ Positioning

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

○ When and how it is assigned

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

(1) PDCA Responsibility-taking System (“Plan,” “Do,” “Check,” and “Act”)

This Program is operated by teachers who support the Program of Electrical, Systems and Information Engineering, 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.

When there is a need to consider the response on a program basis, research laboratory groups responsible for the applicable program take the necessary measures. In that case, the responsible person is appointed by the Cluster leader.

(2) Program assessment

○ Criteria for Program assessment

Whether or not each class subject is properly allocated in light of the goals of the program, and whether course content is appropriate

Whether or not students taking the course have one average achieved the goal or above

Whether or not the system runs in proper cycles that enable the program to continually improve in an upward spiral

○ How it is assessed

Conducting self-assessment for each subject based on the results of class evaluations carried out by students who have taken the course, and also based on grade calculation results

Regarding the upward spiral of the program, obtaining the questionnaire from graduates in suitable cycles and also collecting the needs from business corporations

○ Position on giving feedback to students and how it is approached

For individual courses, the teacher in charge gives comments on course evaluation results and academic achievement results.

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

Cluster 2 Electrical, Electronic and Systems Engineering

Required subject (period of registration specified)

○ Compulsory elective subject (any of these subjects shall be registered)

Free elective subject (any of these subjects shall be registered)

Subject Type				Required No. of credits	Class subjects, etc.	No. of credits	Type of course registration	Year in which the s t8 28.6 Tm(Ty)-4.656 30 re0eTyc(9kID (re)h6 Tm(*T (t)8 (e l)															
												Spring		Fall		Spring		Fall		Spring		Fall	
								1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T
	Peace science curse			2		2	Compulsory elective		○														
Basic Courses in University Education	Introduction to University Education			2	Introduction to University Education	2	Required																
Basic Courses in University Education	Introductory Seminar for First-Year			2	Introductory Seminar for First-Year Students	2	Required																
Common Subjects	Area Courses			4	Courses in Arts and Humanities/Social Sciences	2	Compulsory elective	○		○													
Common Subjects	Area Courses			4	Courses in Natural Sciences	2			○		○												
Common Subjects	Foreign Languages	English (Note2 3)	Basic English Usage	2	Basic English UsageI	1	Required																
					Basic English UsageII	1																	
			Communication	2	CommunicationI	1	Required																
					Communication I	1																	
			Communication	2	Communication II	1	Required																
					Communication II	1																	
		Initial Foreign Languages (Select one language from German, French, Spanish, Russian, Chinese, Korean and Arabic)		2	1 subjects from Basic language I	1	Compulsory elective																
					1 subjects from Basic language II	1																	
	Information and Data Science Courses			2	Introduction to Information and Data Sciencies	2	Required																
	Health and Sports Cou			2		1or2	Compulsory elective	○	○	○	○												
	Basic Subjects			16	CalculusI	2	Required																
					CalculusII	2																	
					Linear AlgebraI	2																	
					Linear AlgebraII	2																	
					Seminar in Basic Mathematics I	1																	
					Seminar in Basic Mathematics II	1																	
					General Mechanics I	2																	
					General Mechanics II	2																	
					Experimental Methods and Laboratory Work in Physics I Note 4	1																	
					Experimental Methods and Laboratory Work in Physics II Note 4	1																	
	Free elective subjects			6	From all Subject Type Note 5		Free elective																
	No. of credits required for graduation			48																			

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 or 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 both Experimental Methods and Laboratory Work 1credit and Experimental Methods and Laboratory Work 1credit .

Note 5 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

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Academic Achievements in Electrical Systems and Information Engineering Program

The Relationship between Evaluation Items and Evaluation Criteria

		Excellent	Very Good	Good
(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.
(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 mathemao utilize standard basic	

Relationships between the evaluation items and class subjects

					Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation items	
Liberal Arts Education	Introduction to University Education	2	Require	1semsester-1T																											100
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Require	1semsester																	50	1	50	1							100
Liberal Arts Education	Peace Science Courses	2	Elective	1semsester-2T																							100	1			100
Liberal Arts Education	Area Courses Courses in Arts and Humanities/Social Sc	4	Elective	1semsester-1T 2semsester-3T																							100	1			100
Liberal Arts Education	Area Courses Courses in Natural Sciences	4	Elective	1semsester-2T 2semsester-4T																							100	1			100
Liberal Arts Education	Basic English UsageI	1	Require	1semsester Intensive course																									100	1	100
Liberal Arts Education	Basic English UsageII	1	Require	2semsester Intensive course																									100	1	100
Liberal Arts Education	CommunicationI	1	Require	1semsester																									100	1	100
Liberal Arts Education	Communication I	1	Require	1semsester																									100	1	100
Liberal Arts Education	Communication II	1	Require	2semsester																									100	1	100
Liberal Arts Education	Communication II	1	Require	2semsester																									100	1	100
Liberal Arts Education	Basic language I	1	Elective	1semsester-1T																							100	1			100
Liberal Arts Education	Basic language II	1	Elective	1semsester-2T																							100	1			100
Liberal Arts Education	Information and Data Science Courses	2	Require	1semsester-2T	100	1																									100
Liberal Arts Education	Health and Sports Courses	2	Elective	1 2semsester																							100	1			100
Liberal Arts Education	CalculusI	2	Require	1semsester-2T			100	1																							100
Liberal Arts Education	CalculusII	2	Require	2semsester-4T			100	1																							100
Liberal Arts Education	Linear AlgebraI	2	Require	1semsester-1T			100	1																							100
Liberal Arts Education	Linear AlgebraII	2	Require	2semsester-3T			100	1																							100
Liberal Arts Education	Seminar in Basic Mathematics I	1	Require	1semsester-2T			100	1																							100
Liberal Arts Education	Seminar in Basic Mathematics II	1	Require	2semsester-4T			100	1																							100
Liberal Arts Education	General Mechanics I	2	Require	1semsester-1T					100	1																					100
Liberal Arts Education	General Mechanics II	2	Require	2semsester-3T					100	1																					100
Liberal Arts Education	Experimental Methods and Laboratory Work in Physics I	2	Require	2semsester					100	1																					100
Specialized Education	Introduction to Energy and Information Systems	2	Require	2semsester-4T	50	1					50	1																			100
Specialized Education	Applied Mathematics I	2	Require	2semsester-3T									100	1	Specialized Education																100
Specialized Education	Applied Mathematics II	2	Elective	3semsester-1T									100	1																	100
Specialized Education	Applied Mathematics III	2	Require	3semsester-2T	2		E						100						1 0 0												100

Sheet

Curriculum Map of Electrical, Electronic and Systems Engineering

	Academic Achievement	2nd grade Spring	2nd grade Fall	3rd grade Spring	3rd grade Fall	4th grade Spring	4th grade Fall
Knowledge /Understanding	(1) The ethics and understanding about the relations between society and technology considered basically necessary for engineers.	(2T)Introduction to Information and Data Sciences ◎	(4T)Introduction to Energy and Information Systems				
	(2) Basic knowledge of mathematics such as calculus and linear algebra, which is required for scientists/engineers.	(2T)CalculusI ◎ (1T)Linear AlgebraI (2T)Seminar in Basic Mathematics I (1T)General Mechanics I	(4T)CalculusII (3T)Linear AlgebraII (4T)Seminar in Basic Mathematics II (3T)General Mechanics II Experimental Methods and Laboratory Work in Physics I ( )				
	Comprehensive understanding and knowledge of technologies in electrical, electronics, systems, and inforsptionsgies (s)-55 (es)-5.8i.eened iar(,)-5.3 (i75 (v)4.5 (h)-16((n)214 (ow)-6(r)022 (ee5.5 (ed-6(s)-12 (l)05 e)-2 (b)-85 (h)-12 (i)05 (c)4.5 (h)-16(i)05 (s)TTc 02 7.8559 33.0 reW nBT/C21 10 Tw 3.8 -03.8 30[und)25.a)-65 (p)1)-(p)14 (s)-5.7n)-14 (el)2.5 en(i)2.5 (ef(or)5 (v)5.8((ec)65 (f)-10(.)TETEMC /P 8MCID 210 8DC46	(3T)Electric Circuit Theory I (4T)Introduction to Energy and Information Systems					
	Mathematical methods required for professionals in electrical, electronics, systems, and information engineering.		(3T)Applied Mathematics I	(1T)Applied Mathematics II (2T)Applied Mathematics III (2T)Discrete Mathematics I (1T)Probability and Statistics	(3T)Synthesis of Applied Mathematics (4T)Engineering Mathematics C	(1T)Engineering Mathematics A	
Abilities/Skills	Concepts, knowledge and methods which are the basis for studies related to electrical, electronics, systems, and information engineering.			Programming I (1T)Electromagnetism I (1T)Exercise of Electromagnetism I (2T)Introduction to Semiconductor Devices and Circuits (2T)Circuit Theory II (2T)Control Systems Engineering I (1T)Mathematical Programming	Programming II (3T)Electromagnetism II (3T)Exercise of Electromagnetism II (3T)Electric Transient Phenomena (4T)Electronic Circuits (3T)Electric Transient Phenomena (4TControl Systems Engineering II (3T)Digital Circuit Design	Programming III (1T)Signal Processing Engineering (1T)Social System Engineering (2T)Introduction to Semiconductor Devices and Circuits) (1T)Theory of Computing	(3T)Robotics (4T)Decision Making ((3T)Digital Circuit Design) ((3T)Algorithms and Data Structures) (4T)Stochastic Modeling
	Ability to apply basic concepts, knowledge, and methods of electrical, electronics, systems, and information engineering to concrete/technical problems.			(2T)Electric and Electronic Measurements	(3T)Exercises in Measurement and Control Engineering (3T)Simulation Engineering (3T)Digital Circuit Design (3T)Algorithms and Data Structures (4T)Fundamentals of Probability Theory (4T)Stochastic Modeling		(3T)Production Control ((3T)Digital Circuit Design) ((3T)Algorithms and Data Structures) (3T)Artificial Intelligence and Machine Learning (4T)Computer Network (4T)Stochastic Modeling (3T)Human Computer Interaction
	Ability to solve practical issues and problems by conducting experiments, using numerical computation methods, and collecting			Basic Experiments in Electrical Engineering I Programming I	Basic Experiments in Electrical Engineering II Programming II	Experiments in Electrical Engineering Electronics and System Engineering I Programming III	Experiments in Electrical Engineering Electronics and System Engineering II
Comprehensive Abilities	(5)Ability to solve practical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and						
	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.	Introductory Seminar for First-Year Students( ) (1T)Introduction to University Education					
	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.	Introductory Seminar for First-Year Students( ) (1T)Introduction to University Education					
	Teamwork, leadership and communication skills in group works.			Basic Experiments in Electrical Engineering I	Basic Experiments in Electrical Engineering II	Experiments in Electrical Engineering Electronics and System Engineering I	Experiments in Electrical Engineering Electronics and System Engineering II
	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	(2T)Peace Science Courses (1T)Area Courses(Courses in Arts and Humanities/Social Sc) (2T)Area Courses(Courses in Natural Sciences) Health and Sports Courses Basic language I Basic language II	(3T)Area Courses(Courses in Arts and Humanities/Social Sc) (4T)Area Courses(Courses in Natural Sciences) Health and Sports Courses				
	Ability of English conversation, reading and writing skills necessary for research accomplishment.	Basic English UsageI CommunicationI Communication I	Basic English UsageII Communication II Communication II Liberal Arts Education	Basic Specialized Subjects	Specialized Subjects	Graduation Thesis	(4T)Technical English Required subject