Appended Form 1

Specifications for Major Program

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Cluster 1 Mechanical Systems, Transportation, Material and Energy

Subject type					Required No. of credits	Class subjects, etc.	No. of credits	Type of course registration	Year in which the subject is taken(*The lower figure means semester) Note 1													
									1st grade				2nd grade				3rd grade				4th grade	
									Spring		Fall		Spring		Fall		Spring		Fall		Spring	Fall
Liberal Arts Education Subjects	Peace Science Courses																					
	Basic Courses in University Education	Introduction to University Education																				
		Introductory Seminar for First-Year Students																				
	Common Subjects	Area Courses																				
					4	Courses in Natural Sciences	2	Compulsory elective														
		Foreign Languages	English (Note 2 3)	Basic English Usage	2	Basic English UsageI	1	Required														
						Basic English UsageII	1															
				Communication I	2	CommunicationI	1	Required														
						Communication I	1															
				Communication II	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 Courses			2		1or2	Compulsory elective														
	Basic Subjects				18	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															
						Basic Electromagnetism	2															
						Experimental Methods and Laboratory Work in Physics I Note	1															
						Experimental Methods and Laboratory Work in Physics II Note	1															
					2	General Chemistry	2	Compulsory elective														
						Experimental Methods and Laboratory Work in Chemistry I Note	1															
						Experimental Methods and Laboratory Work in Chemistry II Note	1															
	No. of credits required for graduation				46																	

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

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 .

Cluster 1 Basic Specialized Subjects

Required subject
Compulsory elective subject
Free elective subject

	Class Subjects	Credits	Type of course registration: Mechanical Systems Engineering	Transportation Systems	Materials Processing	Class Hours/Week: 1st grade Spring 1T	1st grade Fall 2T	2nd grade Spring 3T	2nd grade Fall 4T	3rd grade Spring 1T	3rd grade Fall 2T	4th grade Spring 3T	4th grade Fall 4T	Note
2nd group	Applied Mathematics I	2					4							
	Applied Mathematics II	2						4						
	Applied Mathematics III	2							4					
	Engineering Mathematics A	2								4				
	Engineering Mathematics C	2									4			
	Probability and Statistics	2						4						
	Synthesis of Applied Mathematics	2										4		
	Practice of Mechanics	1					4							
	Engineering Mechanics	2						4						
	Introduction of Mechanical and Transportation Engineering	2					4							
	Technical English	1						4						
	Basic Engineering Computer Programming	2							4					
	Mechanics of Material I	2						4						
	Thermodynamics I	2						4						
	Fluid Dynamics I	2							4					
	Control Engineering I	2							4					
	An Introduction to Engineering Materials	2						4						
	Fundamentals of Materials Processing	2							4					
	Machine Design and Drawing	1					3	3						
	Computer Aided Design	1						3	3					
	Machine Shop Training (a)	1					3	3						
	Machine Shop Training (b)	1						3	3					

Students can select either Machine Shop Training (a) or Machine Shop Training (b)

Required subject
Compulsory elective sul
Free elective subject

		1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T
Dynamics of Vibrations I	2							4									
Experiments in Mechanical Engineering I	1										3	3					
Experiments in Mechanical Engineering II	1														3	3	
Mechanical Engineering Design and Production	1														3	3	
Elementary Electromagnetism	2							4									
Introduction to Quantum Physics	2								4								
Introduction to chemical physics	2											4					
Fluid Dynamics II	2								4								
Compressible Fluid Dynamics	2											4					

Academic Achievement in Educational Program for Energy Transform Engineer

The Relationship between Evaluation Items and Evaluation Criteria

Academic Achievements			Evaluation Criteria		
Evaluation Items			Excellent	Very Good	Good
Knowledge and Understanding	(1)	To develop the ability to work positively and independently on the development of local societies, international society, and business and industries.	To be able to be sufficiently engaged in the development of local societies, international society, and business and industry.	To be able to be engaged in the development of local societies, international society, and business and industry at the standard level.	To be able to be engaged in the development of local societies, international society, and business and industry at the minimum level.
	(2)	Acquiring necessary basic knowledge for an engineer and developing the ability to consider logically.	Acquiring necessary basic knowledge for an engineer and being able to sufficiently and logically consider it.	Acquiring necessary basic knowledge for an engineer and being able to logically consider it at the standard level.	Acquiring necessary basic knowledge for an engineer and being able to logically consider it at the minimum level.
Abilities and Skills	(1)	Acquring basis of mechanical system engineering steadily and developing the applied skill.	Acquring basis of mechanical system engineering steadily, and being able to apply it sufficiently.	Acquring basis of mechanical system engineering steadily, and being able to apply it at the standard level.	Acquring basis of mechanical system engineering steadily, and being able to apply it at the minimum level.
	(2)	Developing the ability of solving the technological issues with flexible ideas and creativity.	Based on flexible ideas and creativity, to be able to sufficiently solve problems related to engineering.	Based on flexible ideas and creativity, to be able to independently solve problems related to engineering to the standard level.	Based on flexible ideas and creativity, to be able to independently solve problems related to engineering at the minimum level.
Overall Abilities	(1)	Cultivating abilities of communication and of internationally collecting information and releasing it	To be able to communicate sufficiently with others, collect and release information internationally.	To be able to communicate with others, collect and release information internationally at the standard level	To be able to communicate with others, collect and release information internationally at the minimum level.

Placement of the Liberal Arts Education in the Major Program

We aim to cultivate a well-rounded character, backed up by a broad range of basic knowledge and an understanding of global environmental issues and problems in the social environment. Furthermore, we aim to cultivate the ability to consider ways to solve problems in the context of the multifaceted relations between people and society, and between nature and engineering. To that end, the following are offered: (1) The acquisition of the necessary abilities and attitudes to see various social issues multilaterally and to understand the complete picture (2) The acquisition of a broader perspective after being exposed to fields outside of one's area of expertise (3) Through sports, the acquisition of knowledge of health and physical strength that form basis of human living (4) The cultivation of the ability to

Relationships between the evaluation items and class subjects

					Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	
Liberal Arts Education	Introduction to University Education	2	Required	1semsester-1T	100	1									100
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Required	1semsester							50	1	50	1	100
Liberal Arts Education	Peace Science Courses	2	Elective	1semsester-2T	100	1									100
Liberal Arts Education	Basic English UsageI	1	Required	1semsester									100	1	100
Liberal Arts Education	Basic English UsageII	1	Required	2semsester									100	1	100
Liberal Arts Education	CommunicationIA	1	Required	1semsester									100	1	100
Liberal Arts Education	Communication IB	1	Required	1semsester									100	1	100
Liberal Arts Education	Communication IIA	1	Required	2semsester									100	1	100
Liberal Arts Education	Communication IIB	1	Required	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	Area Courses Courses in Arts and Humanities/Social Sc	4	Elective	1,2,3,4semsester	100	1									100
Liberal Arts Education	Area Courses Courses in Natural Sciences	4	Elective	1,2,3,4semsester	100	1									100
Liberal Arts Education	Health and Sports Courses	2	Elective	1,2semsester	100	1									100
Liberal Arts Education	Information and Data Science Courses	2	Required	1semsester			100	1							100
Liberal Arts Education	CalculusI	2	Required	1semsester			100	1							100
Liberal Arts Education	CalculusII	2	Required	2semsester			100	1							100
Liberal Arts Education	Linear AlgebraI	2	Required	1semsester			100	1							100
Liberal Arts Education	Linear AlgebraII	2	Required	2semsester			100	1							100
Liberal Arts Education	Seminar in Basic Mathematics I	1	Required	1semsester			100	1							100
Liberal Arts Education	Seminar in Basic Mathematics II	1	Required	2semsester			100	1							100
Liberal Arts Education	General Mechanics I	2	Required	1semsester			100	1							100
Liberal Arts Education	General Mechanics II	2	Required	2semsester			100	1							100
Liberal Arts Education	Basic Electromagnetism	2	Required	3semsester			100	1							100
Liberal Arts Education	Experimental Methods and Laboratory Work in Physics I	2	Required	2semsester			100	1							100
Liberal Arts Education	General Chemistry	2	Elective	3semsester			100	1							100
Liberal Arts Education	Experimental Methods and Laboratory Work in Chemistry I	2	Elective	2semsester			100	1							100
Specialized Education	Applied Mathematics I	2	Required	2semsester					100	1					100
Specialized Education	Applied Mathematics II	2	Required	3semsester					100	1					100
Specialized Education	Applied Mathematics III	2	Required	4semsester					100	1					100
Specialized Education	Engineering Mathematics A	2	Elective	5semsester					100	1					100
Specialized Education	Engineering Mathematics C	2	Elective	4semsester					100	1					100
Specialized Education	Probability and Statistics	2	Required	3semsester					100	1					100
Specialized Education	Synthesis of Applied Mathematics	2	Elective	6semsester					100	1					100
Specialized Education	Practice of Mechanics	1	Elective	2semsester					100	1					100
Specialized Education	Engineering Mechanics	2	Elective	2semsester					100	1					100
Specialized Education	Introduction of Mechanical and Transportation Engineering	2	Required	2semsester					100	1					100
Specialized Education	Technical English	1	Required	3semsester					100	1					100
Specialized Education	Basic Engineering Computer Programming	2	Required	3semsester			100	1							100
Specialized Education	Experiments in Mechanical Engineering I	1	Required	5semsester							80	1	20		

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		
					(1)		(2)		(1)		(2)		(1)		
					Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	Weighted values of evaluation items in the subject	Weightsed values of evaluation items	
Specialized Education	Mechanical Engineering Design and Production	1	Required	6semsester							100	1			100
Specialized Education	Computer Programming	2	Required	5semsester			100	1							100
Specialized Education	Machine Shop Training (a)	1	Required	2semsester							100	1			100
Specialized Education	Machine Shop Training (b)	1	Required	3semsester							100	1			100
Specialized Education	Mechanical Materials I	2	Elective	5semsester					100	1					100
Specialized Education	Mechanical Materials II	2	Elective	6semsester					100	1					100
Specialized Education	Fracture Mechanics	2	Elective	6semsester					100	1					100
Specialized Education	Fusion and Solidification Processings I	2	Elective	5semsester					100	1					100
Specialized Education	Plastic Working and Powder Metallurgy II	2	Elective	6semsester					100	1					100
Specialized Education	Materials Science	2	Elective	4semsester					100	1					100
Specialized Education	Machining	2	Elective	5semsester					100	1					100
Specialized Education	Fluid Dynamics II	2	Required	4semsester-4T					100	1					100
Specialized Education	Heat Transfer I	2	Required	4semsester-3T					100	1					100
Specialized Education	Combustion Engineering Fundamentals	2	Elective	5semsester					100	1					100
Specialized Education	Internal Combustion Engines	2	Elective	6semsester					100	1					100
Specialized Education	Data Processing and Numerical Analysis	2	Elective	4semsester					100	1					100
Specialized Education	Theory of Elasticity and Plasticity	2	Elective	5semsester					100	1					100
Specialized Education	Computational Solid Mechanics	2	Elective	6semsester					100	1					100
Specialized Education	Mechanics of Materials II	2	Elective	4semsester					100	1					100
Specialized Education	Mechanism and Kinematics	2	Elective	4semsester					100	1					100
Specialized Education	Dynamics of Vibrations II	2	Elective	5semsester					100	1					100
Specialized Education	Control Engineering II	2	Elective	4semsester					100	1					100
Specialized Education	Electrical and Electronic Engineering	2	Elective	5semsester					100	1					100
Specialized Education	Mechatronics	2	Elective	6semsester					100	1					100
Specialized Education	Measurement and Signal Processing	2	Required	4semsester					100	1					100
Specialized Education	Mechanical System Control	2	Elective	5semsester					100	1					100
Specialized Education	Manufacturing System	2	Elective	5semsester					100	1					100
Specialized Education	Machine Elements Design II	2	Elective	5semsester					100	1					100
Specialized Education	Machine Design	2	Elective	6semsester					100	1					100
Specialized Education	Systems Engineering	2	Elective	4semsester					50	1	50	1			100
Specialized Education	Reliability Engineering	2	Elective	5semsester	10	1			90	1					100
Specialized Education	Machine Elements Design I	2	Elective	4semsester					100	1					100
Specialized Education	Internship	1	Elective	6semsester	40	1					30	1	30	1	100
Specialized Education	Elementary Electromagnetism	2	Required	4semsester					100	1					100
Specialized Education	Introduction to Quantum Physics	2	Required	4semsester					100	1					100
Specialized Education	Introduction to chemical physics	2	Elective	5semsester					100	1					100
Specialized Education	Compressible Fluid Dynamics	2	Elective	5semsester					100	1					100
Specialized Education	Computational Fluid Dynamics	2	Elective	semsester					100	1					100
Specialized Education	Fluid Machinery	2	Elective	semsester					100	1					100
Specialized Education	Thermodynamics II	2	Elective	semsester-4T					100	1					100
Specialized Education	Statistical and Thermal Physics	2	Elective	semsester					100	1					100
Specialized Education	Heat Transfer II	2	Elective	5semsester					100	1					100
Specialized Education	Basic Chemical Kinetics	2	Elective	5semsester					100	1					100
Specialized Education	Steam Power	2	Elective	6semsester					100	1					100
Specialized Education	Plasma Engineering	2	Elective	5semsester					100	1					100
Specialized Education	Radiation Engineering	2	Elective	6semsester					100	1					100
Specialized Education	Nuclear Engineering	2	Elective	6semsester					100	1					100
Specialized Education	Optical Measurement Techniques	2	Elective	6semsester					100	1					100
Specialized Education	Natural-Energy Utilization Engineering	2	Elective	5semsester					100	1					100
Specialized Education	Transportation	2	Elective	semsester-4T					100	1					100
Specialized Education	Graduation Thesis	5	Required	7,8semsester							55	1	45	1	100

Curriculum Map of Energy Transform Engineering

Sheet

Evaluation Items	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Knowledge and Understanding To develop the ability to work positively and independently on the development of local societies, international society, and business and industries.	Introduction to University Education Peace Science Courses ○ Area Courses ○ Health and Sports Courses ○	Area Courses ○ Health and Sports Courses ○	Area Courses ○	Area Courses ○	Reliability Engineering	Internship		
Acquiring necessary basic knowledge for an engineer and developing the ability to consider logically.	Introduction to Information and Data Sciences (◎) CalculusI ◎ Linear AlgebraI ◎ Seminar in Basic Mathematics I ◎ General Mechanics I ◎	CalculusII Linear AlgebraII Seminar in Basic Mathematics II General Mechanics II Experimental Methods and Laboratory Work in Physics I Experimental Methods and Laboratory Work in Chemistry I ○	Basic Electromagnetism General Chemistry ○ Basic Engineering Computer Programming					
Acquring basis of mechanical system engineering and materials processing steadily	Applied Mathematics I Practice of Mechani Engineering Mechanics Introduction of Mechanical and Transportation Engineering Machine Design and Drawing	Applied Mathematics II Probability and Statistics Mechanics of Material I Thermodynamics I Fluid Dynamics I Control Engineering I An Introduction to Engineering Materials Fundamentals of Materials Processing	Applied Mathematics III Engineering Mathematics C ○ Dynamics of Vibrations I Materials Science Elementary Electromagnetism Introduction to Quantum Physics Fluid Dynamics II Thermodynamics II Heat Transfer I Data Processing and Numerical Analysis ○ Mechanics of Materials II Mechanism and Kinematics ○ Control Engineering II Measurement and Signal Processing (◎) Machine Elements Design I ○ Systems Engineering Transportation	Engineering Mathematics A ○ Computer Programming Mechanical Materials I Fusion and Solidification Processings I Machining Introduction to chemical physics Heat Transfer II Combustion Engineering Fundamentals Plasma Engineering Theory of Elasticity and Plasticity Dynamics of Vibrations II Electrical and Electronic Engineering ○ Mechanical System Control Manufacturing System Machine Elements Design II Reliability Engineering Compressible Fluid Dynamics Basic Chemical Kinetics Natural-Energy Utilization Engineering	Synthesis of Applied Mathematics ○ Dynamics of Vibrations II Fracture Mechanics Plastic Working and Powder Metallurgy II Statistical and Thermal Physics Internal Combustion Engines ○ Computational Solid Mechanics ○ Mechatronics Optical Measurement Techniques ○ Computational Fluid Dynamics Machine Design Fluid Machinery Internal Combustion Engines Steam Power Radiation Engineering Nuclear Engineering		
Developing the ability of solving the technological issues with flexible ideas and creativity.	Introductory Seminar for First-Year Students	Machine Shop Training (a) ○	Machine Shop Training (b) ○ Computer Aided Design	Systems Engineering	Experiments in Mechanical Engineering I	Experiments in Mechanical Engineering II Mechanical Engineering Design and Production Internship	Graduation Thesis	Graduation Thesis
Comprehensive Abilities Cultivating abilities of communication and of internationally collecting information and releasing it	Introductory Seminar for First-Year Students Basic English UsageI CommunicationI Communication I Basic language I Basic language II ○	Basic English UsageII Communication II Communication II	Technical English		Experiments in Mechanical Engineering I	Experiments in Mechanical Engineering II Internship	Graduation Thesis	Graduation Thesis

Color-code Symbol

Common subjects — Required subject

Foundation Courses — ○ Compulsory elective subject

Basic Specialized Subjects The first group — Free elective subject

Basic Specialized Subjects The second group

Specialized Subjects