When to start the Program

Credit Requirements

How the program is assessed

Position on feedback to students and how it should be conducted

Cluster 1 Mechanical Systems, Transportation, Material and Energy

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 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		
								1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	
Liberal Arts Education Subjects	Peace Science Courses			2		2	Required																		
	Basic Courses in University Education	Introduction to University Education		2	Introduction to University Education	2	Compulsory elective																		
		Introductory Seminar for First-Year Students		2	Introductory Seminar for First-Year Students	2	Compulsory elective																		
	Common Subjects	Area Courses		4	Courses in Arts and Humanities/Social Sc	2	Compulsory elective																		
				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	Elements of Information Literacy or Exercise in Information Literacy	2	Compulsory elective																		
		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 Mathem	1																			
					Seminar in Basic Mathem	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

Group	Class Subjects	Credits	Mechanical Systems Engineering	Transportation Systems	Materials Processing	Energy Transform Engineering	1st grade Spring 1T	2T	Fall 3T	4T	2nd grade Spring 1T	2T	Fall 3T	4T	3rd grade Spring 1T	2T	Fall 3T	4T	4th grade Spring 1T	2T	Fall 3T	4T	Note
1st 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											
2nd group	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										
	Computer Programming	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 subject
Free elective subject

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				
Mechanical Materials I	2										4						
Mechanical Materials II	2												4				
Fracture Mechanics	2												4				
Fusion and Solidification Processings I	2										4						
Plastic Working and Powder Metallurgy II	2											4					
Materials Science	2								4								
Machining	2										4						
Elementary Electromagnetism	2							4									
Introduction to Quantum Physics	2																

Sheet

Academic Achievements in Educational Program for Materials and Processing
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)	Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply	Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply it	Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply it at the standard level.	Acquiring basis of mechanical system, material creation and processing 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 understand the position of machine system engineers and material creating/processing engineers in society, and to solve ethical problems

Relationships between the evaluation items and class subjects

Subject type	Class subjects	credits	Type of course registration	Period	Knowledge and Understanding (1)		Knowledge and Understanding (2)		Abilities and Skills (1)		Abilities and Skills (2)		Comprehensive Abilities (1)		Total weighted values of evaluation items in the subject
					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									
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	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	Basic English UsageI	1	Required	1semsester									100	1	100
Liberal Arts Education	Basic English UsageII	1	Required	2semsester									100	1	100
Liberal Arts Education	CommunicationI	1	Required	1semsester									100	1	100
Liberal Arts Education	Communication I	1	Required	1semsester									100	1	100
Liberal Arts Education	Communication II	1	Required	2semsester									100	1	100
Liberal Arts Education	Communication II	1	Required	2semsester									100	1	100
Liberal Arts Education	Basic language I	1	Elective	1semsester-1T									100	1	100
Liberal Arts Education	Basic languageII	1	Elective	1semsester-2T									100	1	100
Liberal Arts Education	Elements of Information Literacy or Exercise in Information Literacy	2	Required	1semsester			100	1							100
Liberal Arts Education	Health and Sports Courses	2	Elective	1,2semsester	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	Mechanics of Material I	2	Required	3semsester					100	1					100
Specialized Education	Dynamics of Vibrations I	2	Required	4semsester					100	1					100
Specialized Education	Thermodynamics I	2	Required	3semsester-1T					100	1					100
Specialized Education	Fluid Dynamics I	2	Required	3semsester					100	1					100
Specialized Education	Control Engineering I	2	Required	3semsester					100	1					100
Specialized Education	An Introduction to Engineering Materials	2	Required	3semsester					100	1					100
Specialized Education	Fundamentals of Materials Processing	2	Required	3semsester					100	1					100
Specialized Education	Computer Programming	2	Required	5semsester			100	1							100
Specialized Education	Experiments in Mechanical Engineering I	1	Required	5semsester							80	1	20	1	100
Specialized Education	Experiments in Mechanical Engineering II	1	Required	6semsester							80	1	20	1	100
Specialized Education	Mechanical Engineering Design and Production	1	Required	6semsester							100	1			100
Specialized Education	Machine Design and Drawing	1	Required	2semsester					100	1					100
Specialized Education	Computer Aided Design	1	Required	3semsester							100	1			100
Specialized Education	Machine Shop Training (a)	1	Required	2semsester							100	1			100

Subject type	Class subjects	credits	Type of course registration	Period	Knowledge and Understanding (1)		Knowledge and Understanding (2)		Abilities and Skills (1)		Abilities and Skills (2)		Comprehensive Abilities (1)		Total weighted values of evaluation items in the subject
					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	Machine Shop Training (b)	1	Required	3semsester							100	1			100
Specialized Education	Mechanical Materials I	2	Required	5semsester					100	1					100
Specialized Education	Mechanical Materials II	2	Elective	6semsester					100	1					100
Specialized Education	Fracture Mechanics	2	Required	6semsester					100	1					100
Specialized Education	Fusion and Solidification Processings I	2	Required	5semsester					100	1					100
Specialized Education	Plastic Working and Powder Metallurgy II	2	Elective	6semsester					100	1					100
Specialized Education	Materials Science	2	Required	4semsester					100	1					100
Specialized Education	Machining	2	Required	5semsester					100	1					100
Specialized Education	Elementary Electromagnetism	2	Elective	4semsester					100	1					100
Specialized Education	Introduction to Quantum Physics	2	Elective	4semsester					100	1					100
Specialized Education	Introduction to chemical physics	2	Elective	5semsester					100	1					100
Specialized Education	Fluid Dynamics II	2	Elective	4semsester-4T					100	1					100
Specialized Education	Thermodynamics II	2	Elective	4semsester-4T					100	1					100
Specialized Education	Heat Transfer I	2	Required	4semsester-3T					100	1					100
Specialized Education	Heat Transfer II	2	Elective	5semsester					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	Plasma Engineering	2	Elective	5semsester					100	1					100
Specialized Education	Data Processing and Numerical Analysis	2	Elective	4semsester					100	1					100
Specialized Education	Theory of Elasticity and Plasticity	2	Required	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	Instrumentation Engineering	2	Elective	4semsester					100	1					100
Specialized Education	Optical Measurement Techniques	2	Elective	6semsester					100	1					100
Specialized Education	Mechanical System Control	2	Elective	5semsester					100	1					100
Specialized Education	Data Structure and Algorithm	2	Elective	6semsester					100	1					100
Specialized Education	Manufacturing System	2	Elective	5semsester					100	1					100
Specialized Education	Machine Elements Design I	2	Elective	4semsester					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	Transportation	2	Elective	4semsester					100	1					100
Specialized Education	Internship	1	Elective	6semsester	40	1					30	1	30	1	100
Specialized Education	Graduation Thesis	5	Required	7,8semsester							55	1	45	1	100

Curriculum Map of Materials Processing

Sheet

Academic achievements / Evaluation Items		1st grade Spring	1st grade Fall	2nd grade Spring	2nd grade Fall	3rd grade Spring	3rd grade Fall	4th grade Spring	4th grade 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.	Exercise in Information Literacy; Elements of Information Literacy; 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		Computer Programming			
Abilities and Skills	Acquring basis of mechanical system engineering and Material processing steadily and developing the applied skill.		Applied Mathematics I; Practice of Mechanics; Engineering Mechanics; Introduction of Mechanical and Transportation Engineering	Applied Mathematics II; Probability and Statistics; Mechanics of Material I; Thermodynamics I; An Introduction to Engineering Materials; Fundamentals of Materials Processing	Applied Mathematics III; Engineering Mathematics C; Dynamics of Vibrations I; Materials Science; Fluid Dynamics II; Thermodynamics II; Heat Transfer I; Data Processing and Numerical Analysis; Mechanics of Materials II; Mechanism and Kinematics; Control Engineering II; Instrumentation Engineering; Machine Elements Design I; Systems Engineering	Engineering Mathematics A; Mechanical Materials I; Fusion and Solidification Processings I; Machining; 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; Remote sensing	Synthesis of Applied Mathematics; Mechanical Materials II; Fracture Mechanics; Plastic Working...; Internal Combustion Engines; Computational Solid Mechanics; Mechatronics; Optical Measurement Techniques; Data Structure and Algorithm; Machine Design		
	Developing the ability of solving the technological issues with flexible ideas and creativity.								
Comprehensive Abilities	Cultivating abilities of communication and of internationally collecting information and releasing it	Basic English UsageI; CommunicationI; Communication I; Basic language I; Basic language II	Communication II; Communication II	Technical English			Internship	Graduation Thesis	Graduation Thesis

Color-code: **Common subjects** | **Foundation Courses** | Basic Specialized Subjects The first group | Basic Specialized Subjects The second group | **Specialized Subjects**

Symbol: Required subject | Compulsory elective subject | Free elective subject