

For entrants in AY 2022

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When to start the Program
Credit Requirements

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Positioning

When and how it is assigned

How it is assigned

How the program is assessed

Position on feedback to students and how it should be conducted

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										
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 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 Sciences	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

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

Cluster 1 Basic Specialized Subjects

Class Subjects	Credits	Type of course registration				Class Hours/Week								Note			
		Mechanical Systems Engineering	Transportation Systems	Materials Processing	Required subject				Compulsory elective subject				Free elective subject				
					4th grade		Spring		Fall		Spring		Fall		Spring		Fall
1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T		
Applied Mathematics I	2						4										
Applied Mathematics II	2														4		
Applied Mathematics III	2															4	
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)

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

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	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject		Weighted values of evaluation items
Liberal Arts Education	Introduction to University Education	2	Required	1semester-1T	100	1									
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Required	1semester							50	1	50	1	100
Liberal Arts Education	Peace Science Courses	2	Elective	1semester-2T	100	1									100
Liberal Arts Education	Area Courses Courses in Arts and Humanities/Social Sc	4	Elective	1,2,3,4semester	100	1									100
Liberal Arts Education	Area Courses Courses in Natural Sciences	4	Elective	1,2,3,4semester	100	1									100
Liberal Arts Education	Basic English UsageI	1	Required	1semester									100	1	100
Liberal Arts Education	Basic English UsageII	1	Required	2semester									100	1	100
Liberal Arts Education	CommunicationI	1	Required	1semester									100	1	100
Liberal Arts Education	Communication I	1	Required	1semester									100	1	100
Liberal Arts Education	Communication II	1	Required	2semester									100	1	100
Liberal Arts Education	Communication II	1	Required	2semester									100	1	100
Liberal Arts Education	Basic language I	1	Elective	1semester-1T									100	1	100
Liberal Arts Education	Basic languageII	1	Elective	1semester-2T									100	1	100
Liberal Arts Education	Introduction to Information and Data Sciences	2	Required	1semester			100	1							100
Liberal Arts Education	Health and Sports Courses	2	Elective	1,2semester	100	1									100
Liberal Arts Education	CalculusI	2	Required	1semester			100	1							100
Liberal Arts Education	CalculusII	2	Required	2semester			100	1							100
Liberal Arts Education	Linear AlgebraI	2	Required	1semester			100	1							100
Liberal Arts Education	Linear AlgebraII	2	Required	2semester			100	1							100
Liberal Arts Education	Seminar in Basic Mathematics I	1	Required	1semester			100	1							100
Liberal Arts Education	Seminar in Basic Mathematics II	1	Required	2semester			100	1							100
Liberal Arts Education	General Mechanics I	2	Required	1semester			100	1							100
Liberal Arts Education	General Mechanics II	2	Required	2semester			100	1							100
Liberal Arts Education	Basic Electromagnetism	2	Required	3semester			100	1							100
Liberal Arts Education	Experimental Methods and Laboratory Work in Physics I	2	Required	2semester			100	1							100
Liberal Arts Education	General Chemistry	2	Elective	3semester			100	1							100
Liberal Arts Education	Experimental Methods and Laboratory Work in Chemistry I	2	Elective	2semester			100	1							100
Specialized Education	Applied Mathematics I	2	Required	2semester					100	1					100
Specialized Education	Applied Mathematics II	2	Required	3semester					100	1					100
Specialized Education	Applied Mathematics III	2	Required	4semester					100	1					100
Specialized Education	Engineering Mathematics A	2	Elective	5semester					100	1					100
Specialized Education	Engineering Mathematics C	2	Elective	4semester					100	1					100
Specialized Education	Probability and Statistics	2	Required	3semester					100	1					100
Specialized Education	Synthesis of Applied Mathematics	2	Elective	6semester					100	1					100
Specialized Education	Practice of Mechanics	1	Elective	2semester					100	1					100
Specialized Education	Engineering Mechanics	2	Elective	2semester					100	1					100
Specialized Education	Introduction of Mechanical and Transportation Engineering	2	Required	2semester					100	1					100
Specialized Education	Technical English	1	Required	3semester					100	1					100
Specialized Education	Basic Engineering Computer Programming	2	Required	3semester			100	1							100
Specialized Education	Mechanics of Material I	2	Required	3semester					100	1					100
Specialized Education	Dynamics of Vibrations I	2	Required	4semester					100	1					100
Specialized Education	Thermodynamics I	2	Required	3semester-1T					100	1					100
Specialized Education	Fluid Dynamics I	2	Required	3semester					100	1					100
Specialized Education	Control Engineering I	2	Required	3semester					100	1					100
Specialized Education	An Introduction to Engineering Materials	2	Required	3semester					100	1					100
Specialized Education	Fundamentals of Materials Processing	2	Required	3semester					100	1					100
Specialized Education	Computer Programming	2	Required	5semester			100	1							100
Specialized Education	Experiments in Mechanical Engineering I	1	Required	5semester							80	1	20	1	100
Specialized Education	Experiments in Mechanical Engineering II	1	Required	6semester							80	1	20	1	100
Specialized Education	Mechanical Engineering Design and Production	1	Required	6semester							100	1			100
Specialized Education	Machine Design and Drawing	1	Required	2semester					100	1					100
Specialized Education	Computer Aided Design	1	Required	3semester							100	1			100
Specialized Education	Machine Shop Training (a)	1	Required	2semester							100	1			100

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

Curriculum Map of Materials Processing

Sheet

Academic achievements Evaluation Items		1st grade		2nd grade		3rd grade		4th grade	
		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	Area Courses	Area Courses	Area Courses	Reliability Engineering	Internship		
		Peace Science Courses	Health and Sports Courses						
		Area Courses							
		Health and Sports Courses							
	Acquiring necessary basic knowledge for an engineer and developing the ability to consider logically.	Introduction to Information and Data Sciences	CalculusII	Basic Electromagnetism			Computer Programming		
		CalculusI	Linear AlgebraII	General Chemistry					
		Linear AlgebraI	Seminar in Basic Mathematics II	Basic Engineering Computer Programming					
		Seminar in Basic Mathematics I	General Mechanics II						
		General Mechanics I	Experimental Methods and Laboratory Work in Physics I						
			Experimental Methods and Laboratory Work in Chemistry I						
Abilities and Skills	Acquiring basis of mechanical system engineering and Material processing steadily and developing the applied skill.		Applied Mathematics I	Applied Mathematics II	Applied Mathematics III	Engineering Mathematics A	Synthesis of Applied Mathematics		
			Practice of Mechanics	Probability and Statistics	Engineering Mathematics C	Mechanical Materials I	Mechanical Materials II		
			Engineering Mechanics	Mechanics of Material I	Dynamics of Vibrations I	Fusion and Solidification Processings I	Fracture Mechanics		
			Introduction of Mechanical and Transportation Engineering	Thermodynamics I	Materials Science	Machining	Plastic Working and Powder Metallurgy II		
			Machine Design and Drawing	Fluid Dynamics I	Elementary Electromagnetism	Introduction to chemical physics	Statistical and Thermal Physics		
				Control Engineering I	Introduction to Quantum Physics	Heat Transfer II	Internal Combustion Engines		
				An Introduction to Engineering Materials	Fluid Dynamics II	Combustion Engineering Fundamentals	Computational Solid Mechanics		
				Fundamentals of Materials Processing	Thermodynamics II	Plasma Engineering	Mechatronics		
					Heat Transfer I	Theory of Elasticity and Plasticity	Optical Measurement Techniques		
					Data Processing and Numerical Analysis	Dynamics of Vibrations II	Data Structure and Algorithm		
					Mechanics of Materials II	Electrical and Electronic Engineering	Machine Design		
					Mechanism and Kinematics	Mechanical System Control			
					Control Engineering II	Manufacturing System			
					Measurement and Signal Processing	Machine Elements Design II			
					Machine Elements Design I	Reliability Engineering			
					Systems Engineering	Remote sensing			
					Transportation				
	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)	Systems Engineering	Experiments in Mechanical Engineering I	Experiments in Mechanical Engineering II	Graduation Thesis	Graduation Thesis
			Computer Aided Design			Mechanical Engineering Design and Production			
						Internship			
Comprehensive Abilities	Cultivating abilities of communication and of internationally collecting information and releasing it	Introductory Seminar for First-Year Students	Basic English UsageII			Experiments in Mechanical Engineering I	Experiments in Mechanical Engineering II	Graduation Thesis	Graduation Thesis
		Basic English UsageI	Communication II	Technical English			Internship		
		CommunicationI	Communication II						
		Communication I							
		Basic language I							
		Basic language II							

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