For entrants in AY 2021

Appended Form 1

Specifications for Major Program

Name of School (Program) [School of Science (Department of Mathematics)

F	Program name (Japanes	se)X Û É ß ¢ Û Ò
	(English)	Mathematics
1.	Degree to be obtained	: Bachelor of Science

2. Overview

Among the fields of science, mathematics is the subgeowhich standardization and systematization are the most advanced. The Mathematics Program at Hiroshima University mainly aims to educate students to understand a rigorously learn the essence of basic theories in these field modern mathematics such as algebra, geometry, and analysis. Through this process, students develop an in-depth ability to comprehend complex phenomena from mathematical point of view in order to generalize, abstract, systematize, and model these phenomena. Students also enabled to improve their abilities in logical thinking and representation in order to establish a foundation for their future. The abilities described above are required for *itylengi*, formulating, and solving the various problems that appear in all areas of society. We also aim to educaterstuthrough carefully supervised independent study in order to produce professionals who are capable of making automs decisions based on concrete evidence and able to work in various fields while adapting to change and newly-emerging factors. We hope to create researchers who w contribute to the evolution of mathematical science in the future, educators who understand the essence and acade meaning of modern science, and professionals who **sept** sticated mathematical the needs of an information-intensive society. Mastery of basic academic skills an advanced knowledge is expected upon completion of the course.

A great deal of importance will be attached to the continuity of education from the undergraduate to the graduat school. Students can advance to the Mathematics Program in the Division of Advanced Science and Engineering the Graduate School of Advanced Science and Engineeritogtbe Program of Mathematical and Life Sciences in the Division of Integrated Sciences for Life inetGraduate School of Integrated Sciences for Life.

Subjects are arranged clearly and hierarchically intherail arts subjects and specialized education subjects (specialized basic subjects and specialized subjects). Globally standardized lessons are provided for specialized basic subjects and specialized subjects in which lectures upported by exercise sessions. Therefore, achievement in this program is considered to be an achievement of the global standard. In the 3rd year, lessons that enable stude to acquire the knowledge and skills required for exploring the global standard. In the 1 have chosen will be provided. Because of these lessons, students will be able comprehend and enjoy specialized lectures in the continuity of education from the undergraduate school to the graduate school.

Since Mathematics is a common language in the fields of natural science, this program gives consideration to the

fact that students may advance to various fields in science after obtaining their mathematics degree. Specializ fundamental subjects from other programs in the SchoSciefnce are accepted as part of the credit required for graduation.

This program also provides courses to meet the requirements of students who wish to obtain certification a Mathematics teachers for junior and senior high schoolthermore, students who obtain a master's degree are permitted to obtain specialized certification for Mathematics teachers of junior and senior high schools.

3. Diploma policy (policy for awarding degrees and goal of the program)

Based on the aims above, this program will award the degree of Bachelor of Science to students who, in addition earning the required number of credits, have acquired the capabilities described below:

- í The ability to think and make decisions from a wide-ranging perspective
- í The ability to understand the essence of basic theories in the various fields of modern mathematics and how apply those theories
- í The ability to think and express oneself logically
- í The ability to comprehend various phenomena from a matimenhabint of view in order to generalize, abstract, systematize, model, and process them
- í The basic skills and advanced knowledge required formadevastudy and research in the graduate school or for actively working in various fiels orv0.0005 Tw4-25.2 -11 [(Th3)-51 (c)2.5 such as(o)1.6 educa1 (9)-5.7 (82 (m)18

identify and solve problems, think logically, give presentations and be more creative. Academic achievement is evaluated based on grades/scores and performance.

5. Start time and acceptance conditions

In the School of Science, each department holdsance examinations and stipulates the requirement for admission to the department in its application guidelines. This program is designed mainly for students of the Department of Mathematics. Students will take this program when they enter our department.

This program also accepts all students who have already been accepted to this university. Requirements the students who wish to join the Department of Mathematics are stipulated separately based on the provisions regard transfer between schools or departments.

6. Obtainable qualifications

Type 1 license for junior high school Mathematics teachers. Type 1 license for senior high school Mathematics Curator license, certification for Assistant Registered Surveyors, qualification for joining the Skill Training course for health controllers in Health Engineering.

7. Class subjects and their contents

* For the class subjects, refer to the subject table in Attachment 1.

* For the details of the class subjects, refer to the syllabus that is published for each academic year.

8. Academic achievement

The evaluation criteria are specified for each academic achievement item, and the achievement level against the criteria is given at the end of the semester.

The evaluation score for each item is converted to a numerical value (S = 4, A = 3, B = 2, and C = 1) and the evaluation standard for academic achievement from the time the student entered the university to the end of the lasemester is determined by using these values. The evaluation darks consist of three levels, i.e. Excellent, Very Good, and Good.

Evaluation of academic	Converted
achievement	value
S (90 or more points)	4
A (80 – 89 points)	3
B (70 – 79 points)	2
C (60 – 69 points)	1

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

* Refer to the relationship between evaluation items and evaluation criteria described in Attachment 2.

* Refer to the relationship between evaluation items and class subjects described in Attachment 3.

* Refer to the curriculum map in Attachment 4.

9>, Graduation thesis (graduation research) (meaning, student allocation, timing, etc.)

1. Requirements

Students make a further, deeper study of theories and dedge in the research area that they have chosen and organize all of the mathematical knowledge they have acceptuip to and including the third year. They also learn to explain their understanding and ideas clearly affectively while answering questions and engaging in discussion with faculty members and other attendees at events, such as colloquiums. In their graduation resear students who are going to advance to the graduate school acquire further specialized understanding that can be use in their graduate school courses, as well as the abilities and skills required for independent researchers and educators. Students must organize and summarize all of their knowledge from the undergraduate school in their process of preparing and presenting their graduation thesis which will be based on their carefully supervise autonomous study and research.

2. Overview

In the Mathematics Program, students carry out their graduation research by taking the class "Special Study Mathematics and Informatics for Graduation." The content of the graduation research varies widely depending o the faculty member or group. Students get to krtbe specialty of each ment in the class "Advanced Mathematics" that is provided in the first semester of the third year. Intensive guidance seminars are held t announce the outline of the graduation research several months before starting the research.

3. Lab assignment, timing and method

1 Students are assigned to a laboratory at the beginning of the fourth academic year. To be assigned to laboratory, students must be qualified to attend the "Special Study of Mathematics and Informatics for Graduation class.

2 For qualifications to attend "Special Study of Mathematics and Informatics for Graduation", refer to "Qualifications for Attending Special Study of Mathematizend Informatics for Graduati" described in the Study Guidance for the Mathematics Programection of the "Student Handbook" (given when students enter the university).

10>, Responsibility

(1) Responsibility for PDCA (pn, do, check, and act) cycle

The faculty committee of the Mathematics Program (chieáiiQif the Department of Mathematics) is engaged in the processes of "plan" and "do."

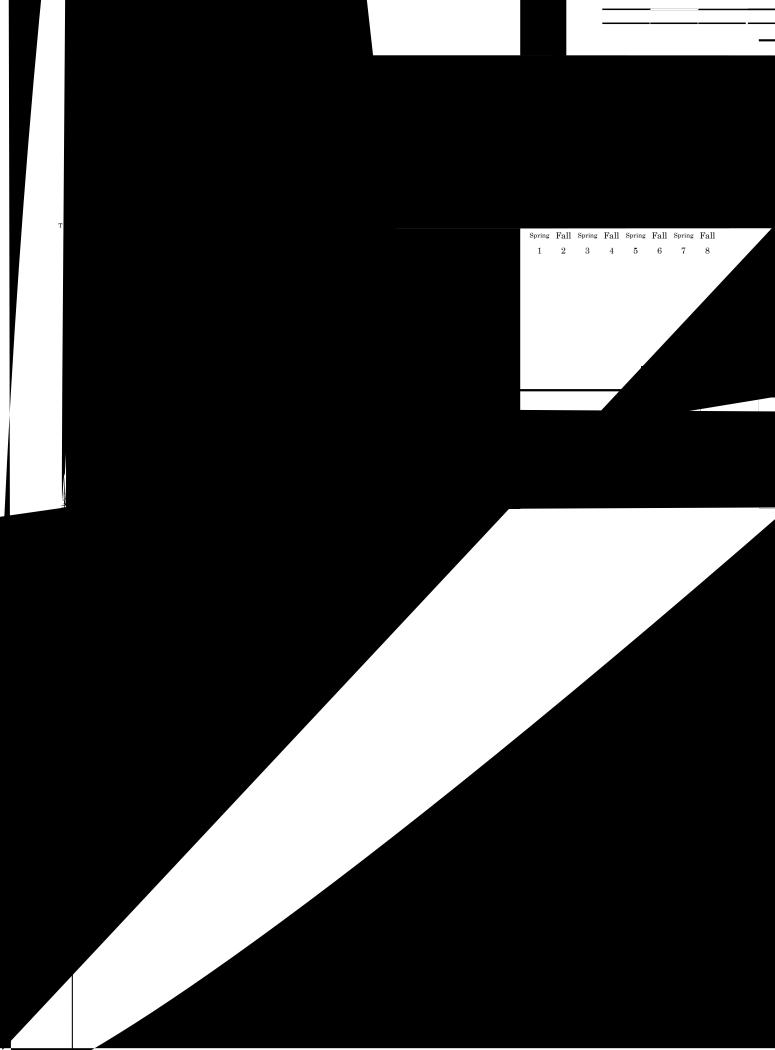
For the processes of "check" and "attie Chair of the Department of Mathematics consults with the Curriculum Review Committee of the Department of Mathematics and carries out the required actions while taking the results of the consultation into consideration.

The faculty members who constitute the faculty commentation each major program are listed in Attachment 5.

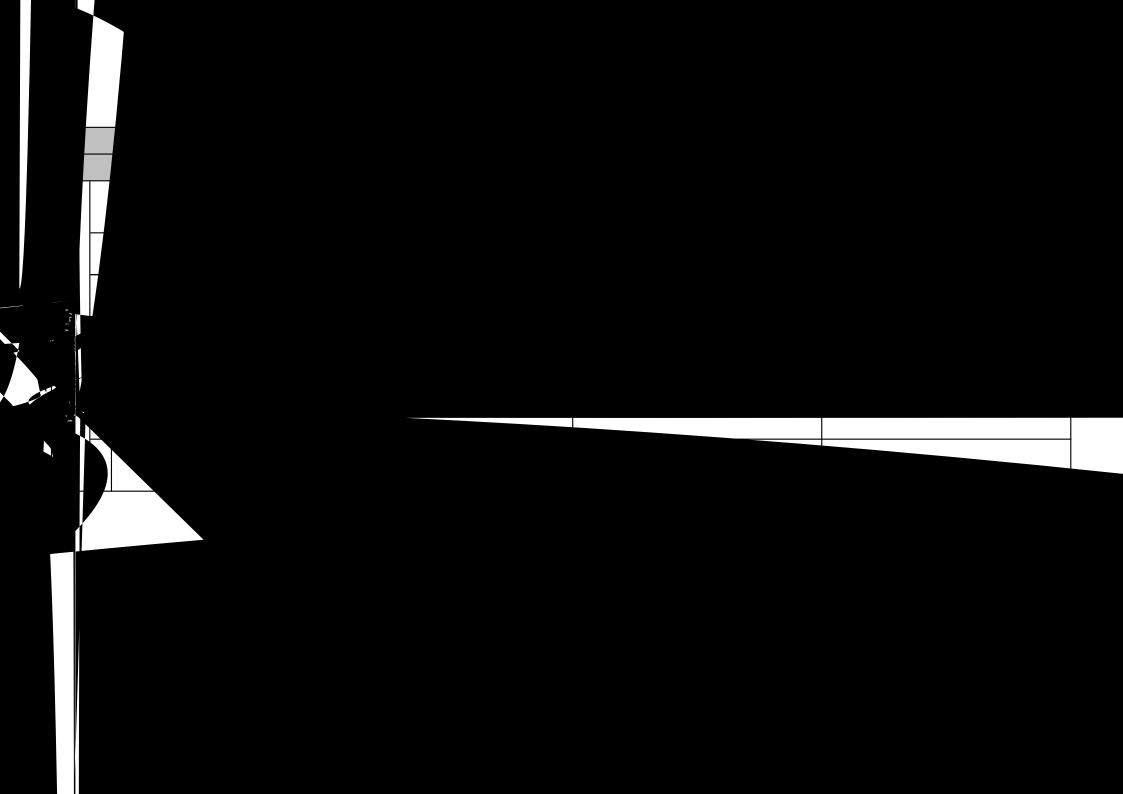
(2) Evaluation of the program

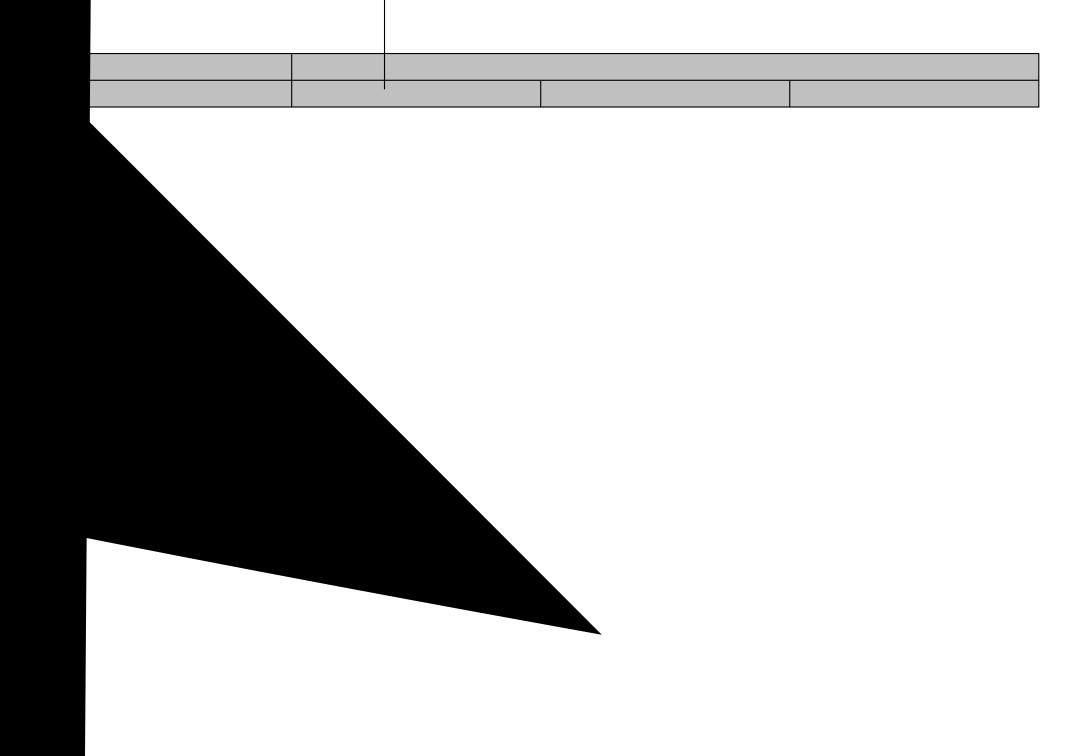
A small-sized consultation meeting with the students of each year is held at the end of the semester to discuss the completed courses. Results of this discussion will be taken into consideration for improving the program.

A booklet entitled "After Completing Lectures" is delived to faculty members and students after the semester ends to notify them about any updated information concerning course curriculum.









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Comprehensive			
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The liberal arts education in this program aims to build the academic foundation required for the specialized education, and develops the capability for autonomous study, as well as scientific and mathematical intelligence based on the ability to collect, analyze, and critically evaluate data. It also enables students to establish the perspective necessary to insight into the essentials and background of phenomena, to develop the broad range of knowledge required for living in a modern society, and to integrate such knowledge

Sheet

Relationships between the evaluation items and class subjects

					Evaluation items Total Abilities and Skills Comprehensive Abilities Weighte																
						Ab	oilities	and Sk	kills					Comp	rehen	sive Al	bilities				weighte d values
							(4)			(1)	(.	2)	(3)	(4)	(5)	of
				Grade	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	Weighted values of	Weighted	evaluati
					evaluation items in	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	evaluation	values of evaluation	on
					the	items	the	items	the	items	the	items	the	items	the	items	the	items	the	items	
Liberal Arts			Elective/		subject		subject		subject		subject		subject		subject		subject		subject		the
Education	Peace Science Courses	2	required	1																	100
Liberal Arts Education	Introduction to University Education	2	Required	1												100					
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Required	1		25 1 25 1 25 1 10 10											100				
Liberal Arts Education	Area Courses	8	Elective/ required	14													100				
Liberal Arts Education	Basic English Usage I	1	Free elective	1			100	1													100
Liberal Arts Education	Basic English Usage II	1	Free elective	2			100	1													100
Liberal Arts	Communication	2	Required	1			100	1													100
Education Liberal Arts	Communication	2	Required	2			100	1													100
Education Liberal Arts	Foreign Languages:	1	Elective/	1			100	1													100
Education Liberal Arts	Basic Studies Foreign Languages:	•	required Elective/					•													
Education Liberal Arts	Basic Studies Foreign Languages:	1	required	1			100	1													100
Education	Basic Studies	1	Elective/ required	2			100	1													100
Liberal Arts Education	Foreign Languages: Basic Studies	1	Elective/ required	2			100	1													100
Liberal Arts Education	Introduction to Information and Data Sciences	2	Required	1	100	1															100
Liberal Arts Education	Computer Programming	2	Elective/ required	1	100	1															100
Liberal Arts Education	Intelligence and Computer	2	Elective/ required	2	100	1															100
Liberal Arts	Ground zero	2	Elective/ required	2	100	1															100
Education Liberal Arts	programming Fundamental Date		required																		
Education	SciencT ype of course																				
	registrat ion																				

[]											E	valuati	on ite	ms							Total	
						Ab	oilities	and Sk	kills						rehen	sive Ak	oilities				weighte	
Subject			Type of		()	3)	(4)	((5)	(1)	(2)	(3)	(4)	(5)	d values of	
Subject Classification	Subject Name	Credits	course registrat ion	Grade	Weighted values of evaluation items in the	Weighted values of evaluation items	Weighted values of evaluation items in the	Weighted values of evaluation	Weighted values of evaluatior items in the subject	Weighted values of evaluation items	Ithe	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation	Weighted values of evaluation items in the subject	Weighted values of evaluation	Weighted values of evaluation items in the subject	Weighted values of evaluation	Weighted values of	Weighted	evaluati on items in	
Liberal Arts Education	Seminar in Linear Al geb ra	1	Required	1	subject		subject		subject		subject		subject		subject		subject		subject		the 100	
Liberal Arts	Linear Algebra	2	Required	2																	10006	eminar in l
Education		Δ																				

											E	valuati	on iter								Total
						Ab	ilities	and Sk	tills					Comp	rehens	sive Al	bilities				weighte
Subject			Type of		(3)	(4)	(5)	(1)	(2	2)	(.	3)	(4)	(5)	d values of
Classification	Subject Name	Credits	course registrat	Grade	Weighted		Weighted		Weighted		Weighted		Weighted		Weighted		Weighted		Weighted		evaluati
			ion			Weighted values of	values of evaluation	Weighted values of		Weighted values of	values of evaluation		values of evaluation	Weighted values of	values of evaluation	Weighted values of	values of evaluation	Weighted values of	values of evaluation	Weighted values of	on
					items in	evaluation		evaluation	items in	evaluation		evaluation		evaluation		evaluation		evaluation		evaluation	items in
					the subject	items	the subject	items	the subject	items	the subject	items	the subject	items	the subject	items	the subject	items	the subject	items	the
Specialized Education	Exercises in Algebra I	1	Required	3																	100
Specialized Education	Algebra II	2	Required	4																	100
Specialized	Exercises in Algebra II	1	Required	4																	100
Specialized	Fundamental Concepts of Mathematics I	2	Required	3																	100
Specialized	Exercises in	1	Required	3																	100
Specialized	Fundamental Concepts Fundamental Concepts	2	Required	4																	100
Education Specialized	of Mathematics II Exercises in	1	Required	4																	100
Education Specialized	Fundamental Concepts Exercises in	2	Required	3	50	1															100
Education	Mathematical Software Special Study of	2	Required	5	- 50	-											<u> </u>				
Specialized Education	Mathematics and Informatics for Graduation	5	Required	78	10	1					14	1	14	1	14	1	14	1	14	1	100
Specialized Education	Algebra	2	Elective/ required	5																	100
Specialized	Exercises in Algebra	2	Elective/ required	5																	100
Specialized	Algebra	2	Elective/ required	6																	100
Specialized	Exercises in Algebra	2	Elective/ required	6																	100
Specialized	Geometry	2	Elective/ required	5																	100
Specialized	Exercises in Geometry	2	Elective/ required	5																	100
Specialized	Geometry	2	Elective/ required	6																	100
Specialized	Exercises in Geometry	2	Elective/ required	6																	100
Specialized	Analysis	2	Elective/ required	5																	100
Specialized	Exercises in Algebra	2	Elective/ required	5																	100
Specialized Education	Analysis	2	Elective/ required	5																	100
Specialized	Exercises in Algebra	2	Elective/ required	5																	100
Specialized	Analysis	2	Elective/ required	6																	100
Specialized	Exercises in Algebra	2	Elective/ required	6																	100

				Evaluation items Total Abilities and Skills Comprehensive Abilities weighte																	
						Ab	ilities	and Sk	tills					Comp	prehens	sive Al	bilities	5			
Subject			Type of		((3)	(4)	(5)	(1)	(1	2)	(3)	(4)	(5)	d values
Classification	Subject Name	Credits	course registrat ion	Grade	evaluation	Weighted values of	evaluation	Weighted values of	evaluation	Weighted values of	evaluation		evaluation		evaluation	Weighted values of	evaluation	Weighted values of	evaluation	Weighted values of	evaluati on
					items in the subject	evaluation items	items in the subject	evaluation items	items in the subject	evaluation items	items in the subject	evaluation items	items in the subject	evaluation items	items in the subject	evaluation items	the subject	evaluation items	items in the subject	evaluation items	items in the
Specialized Education	Analysis	2	Elective/ required	6																	100
Specialized Education	Exercises in Algebra	2	Elective/ required	6																	100
Specialized Education	Mathematics for Computation	2	Elective/ required	4																	100
Specialized Education	Exercises in Mathematics for Computation	2	Elective/ required	4	50	1															100
Specialized Education	Mathematics for Computation	2	Elective/ required	5																	100
Specialized Education	Exercises in Mathematics for Computation	2	Elective/ required	5	50	1															100
Specialized Education	Probability and Mathematical Statistics	2	Elective/ required	5																	100
Specialized Education	Exercises in Probability and Mathematical	2	Elective/ required	5																	100
Specialized Education	Algebra	2	Free elective	7																	100
Specialized Education	Algebra	2	Free elective	8																	100
Specialized Education	Geometry	2	Free elective	7																	100
Specialized Education Specialized	Geometry Elementary nonlinear	2	Free elective Free	8																	100
Education Specialized	studies	2	elective Free	6																	100
Education Specialized	Mathematical Analysis	2	elective Free	7																	100
Education Specialized	Mathematical Analysis Probability and	2	elective Free	8																	100
Education Specialized	Mathematical Statistics Probability and	2	elective Free	6																	100
Education Specialized	Mathematical Statistics	2	elective Free	8	50	1															100
Education Specialized	Data Science	2	elective Free	4	50	1															100
Education Specialized	Network and Algebra Mathematics for	2	elective Free	78	50 50	1															100
Education Specialized	Modeling and Simulation Theory of Complex	2 2	elective Free	6 7	50 50	1															100
Éducation Specialized	Systems Mathematics for	2	elective Free	7	50 50	1															100
Éducation Specialized	Computation	2	elective Free	8	100	1															100
Education	Mathematics Internship		elective	Э	ιω																

											E	valuati	on iter	ns							Total
						Ab	ilities	and Sk	tills					Comp	rehens	sive Ak	oilities				weighte
Subject			Type of course		(,	3)	(4)	(5)	(1)	(2	2)	(.	3)	(4)	(5)	d values
Classification	Subject Name	Credits	registrat		Weighted		Weighted		Weighted		Weighted	Weighted	Weighted		Weighted		Weighted		Weighted	Woightod	evaluati
			ion								evaluation	values of	evaluation	values of	evaluation	values of	evaluation	values of	evaluation	values of	on
					items in the	evaluation items	items in the	evaluation items	items in the	evaluation items	items in the				items in the	evaluation items	items in the	evaluation items	items in the	evaluation items	items in
					subject		subject	Titerito	subject		subject		subject		subject		subject	nonb	subject	TIGHTS	the
Specialized Education	Topics in Mathematics	2	Free elective	78																	100

Curriculum Map of Mathematics

	Academic ac ca base of moder	n mathematics. Being at	ole					4th	grade
		Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester
		Introductory Seminar for First−Year Students(©)	Analysis II(⊚)	Analysis III(⊚)	Analysis IV(⊚)				
		Linear Algebra I(©)	Exercises in Analysis II(©)	Exercises in Analysis III(©)	Exercises in Analysis IV (©)				
		Seminar in Linear Algebra I (⊚)	Seminar in Linear Algebra II (⊚)	Algebra I(©)	Algebra Ⅱ(◎)				
		Introduction to Mathematics (⊚)	Linear Algebra II(⊚)	Exercises in Algebra I(©)	Exercises in Algebra II(©)				
		Analysis I(©)		Fundamental Concepts of Mathematics I(©)	Fundamental Concepts of Mathematics II(©)				
		Exercises in Analysis I(⊚)		Exercises in Fundamental Concepts Mathematics I(©)	Exercises in Fundamental Concepts Mathematics II(©)				
к				Exercises in Mathematical Software(©)					
n o					Mathematics for Computation (O)	Algebra A(O)	Algebra B(O)		
w						Geometry A(O)	Geometry B(O)		
	nderstanding on primary theory of modern					Analysis A(O)	Analysis C(O)		
d ma	athematics established on classical theory.					Mathematic Mathematics	hema u Statistic		
g					Data Science(∆)	polmbbey and	elementary nonlinear studies	Algebra $C(\Delta)$	Algebra D(∆)
е							(△) Probability and Mathematical	Geometry $C(\Delta)$	Geometry $D(\Delta)$
а							Statistics B(ム) Mathematics for Modeling	Mathematical Analysis $A(\Delta)$	Mathematical Analysis $B(\Delta)$
n d							and Simulation (Δ)	Theory of Complex Systems (Δ)	Mathematics for Computation B
U								Topics in Geometry (Δ)	(Δ) Probability and Mathematical Statistics C(Δ)
n								Topics in Analysis(∆)	Topics in Algebra(Δ)
d e								Topics in Probability and Mathematical Statistics(Δ)	Network and Algebra (Δ)
r								Network and Algebra (Δ)	
s t		Peace Science Courses(O)	Area Courses(O)	Area Courses(O)	Area Courses(O)				
а		Area Courses(O)							
n d									
i		Introduction to Physics A	Introduction to Information Mathematics(O)						
n		Introduction to Chemistry A	Introduction to Physics B						
g —		(O) Introduction to Biological	(O) Introduction to Chemistry B						
	eing able to understand, learn and explain	SciencesA(O) Introduction to Earth and	(O) Introduction to Biological						
	gical framework and system of basic udying according to each subject and	Planetary Sciences A(O)	SciencesB(O) Introduction to Earth and						
ne	ecessary knowledge and skills for	Introduction to University	Planetary Sciences B(O) Social Cooperation Courses						
	onstructing learning.	Education (©) Social Cooperation Courses	(Δ)						
Ał	ble to understand, learn, and explain the	(A)							
ne	cessity of college education, career								
ed	lucation, and a code of ethics.								

Academic achievements	1st	grade	2n	d grade	3rd	grade	4th	grade
Evaluation items	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester
	Analysis I(©)	Analysis II(⊚)	Analysis III(©)	Analysis IV(©)	Algebra A(O)	Algebra B(O)	Special Study of Mathematics and Informatics for Graduation (©)	Special Study of Mathematics and Informatics for Graduatior (©)
	Exercises in Analysis I(©)	Exercises in Analysis II(©)	Exercises in Analysis III(©)	Exercises in Analysis Ⅳ(◎)	Exercises in Algebra A(O)	Exercises in Algebra $B(O)$		
			Algebra I(©)	Algebra Ⅱ(◎)	Geometry A(O)	Geometry B(O)		
			Exercises in Algebra I(©)	Exercises in Algebra II(©)	Exercises in Geometry A(O)	Exercises in Geometry B(O)		
To acquire basic mathematical abilities			Fundamental Concepts of Mathematics I(©)	Fundamental Concepts of Mathematics Ⅱ(◎)	Analysis A(O)	Analysis C(O)		
(Ability to understand concepts, calculation ability, argumentation ability).			Exercises in Fundamental Concepts Mathematics I(©)	Exercises in Fundamental Concepts Mathematics II(©)	Exercises in Analysis $A(O)$	Exercises in Analysis $C(O)$		
				Mathematics for Computation (O)	Analysis B(O)	Analysis D(O)		
					Exercises in Analysis B(O)	Exercises in Analysis $D(O)$		
					$\begin{array}{l} \mbox{Mathematics for Computation} \\ A(O) \\ \mbox{Probability and Mathematical} \\ \mbox{Statistics } A(O) \\ \mbox{Exercises in Probability and} \\ \mbox{Mathematical Statistics } A \\ (O) \end{array}$			
				Exercises in Mathematics for Computation(O)	Exercises in Algebra A(O)	Exercises in Algebra $B(O)$	Special Study of Mathematics and Informatics for Graduation (©)	Special Study of Mathematic and Informatics for Graduatic (©)
					Exercises in Geometry A(O)	Exercises in Geometry B(O)		
To acquire skills to formulate and solve	e				Exercises in Analysis A(O)	Exercises in Analysis $C(O)$		
mathematical questions.					Exercises in Analysis B(O)			
					Exercises in Mathematics for Computation $A(O)$			
					Exercises in Probability and Mathematical Statistics A (O)			
To learn basic knowledge, skills, and attitude: related to information. Based on them, to be	Introduction to Information ^S and Data Sciences(©) e	Intelligence and Computer	Exercises in Mathematical Software(©)	Exercises in Mathematics for Computation(O)	Exercises in Mathematics for Computation A(O)	Mathematics for Modeling and Simulation(Δ)	Special Study of Mathematics and Informatics for Graduation (©)	Special Study of Mathematic and Informatics for Graduati (©)
able to process, output and input information	, Computer Programming(O)	Ground zero programming (O)		Data Science (Δ)			Theory of Complex Systems (Δ)	Mathematics for Computatio (Δ)
as well as to utilize information appropriately.		Fundamental Date Science					Network and Algebra (Δ)	Network and Algebra (Δ)
	Communication IA(©)	Communication IIA(©)						
	Communication IB(©)	Communication IIB(©)						
Being able to conduct daily communication orally or in papg anuanuanut)	Foreign Languages: Basic Studies I(O) Foreign Languages: Basic Studies II(O)	Foreign Languages: Basic Studies Ⅲ(O) Foreign Languages: Basic Studies Ⅳ(O)						
	Basic English Usage $I(\Delta)$	Basic English Usage $II(\Delta)$		English Seminar on Mathematics (O)				
Through practice of sports, being able to explain the necessity of physical strenth and health promotion.	Health and Sports Courses (\bigcirc)	Health and Sports Courses						

health promotion.