Appended Form 1

Specifications for Major Program

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

Program name (Japanese)	
(English)	Mathematics

1. Degree to be obtained: Bachelor of Science

2. Overview

Among the fields of science, mathematics is the subject for which standardization and systematization are the most advanced. The Mathematics Program at Hiroshima University mainly aims to educate students to understand and rigorously learn the essence of basic theories in the fields of modern mathematics such as algebra, geometry, and analysis. Through this process, students develop an in-depth ability to comprehend complex phenomena from a mathematical point of view in order to generalize, abstract, systematize, and model these phenomena. Students are 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 identifying, formulating, and solving the various problems that appear in all areas of society. We also aim to educate students through carefully supervised independent study in order to produce professionals who are capable of making autonomous 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 will contribute to the evolution of mathematical science in the future, educators who understand the essence and academic meaning of modern science, and professionals who have sophisticated mathematical thinking abilities and the creativity required to meet the needs of an information-intensive society. Mastery of basic academic skills and 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 graduate school. Students can advance to the Mathematics Program in the Division of Advanced Science and Engineering in the Graduate School of Advanced Science and Engineering or to the Program of Mathematical and Life Sciences in the Division of Integrated Sciences for Life in the Graduate School of Integrated Sciences for Life.

Subjects are arranged clearly and hierarchically into liberal arts subjects and specialized education subjects (specialized basic subjects and specialized subjects). Globally standardized lessons are provided for specialized

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 holds entrance 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 for students who wish to join the Department of Mathematics are stipulated separately based on the provisions regarding 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 these 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 last semester is determined by using these values. The evaluation standards consist ds consists 345660 C13(v) v0 1 57.36

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

1. Requirements

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

2. Overview

In the Mathematics Program, students carry out their graduation research by taking the class "Special Study of Mathematics and Informatics for Graduation." The content of the graduation research varies widely depending on the faculty member or group. Students get to know the specialty of each mentor in the class "Advanced Mathematics" that is provided in the first semester of the third year. Intensive guidance seminars are held to 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 a 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

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

Table of Registration Standards for Mathematics Program

Refer to Study Guidance for the Mathematics Program for requirements for attending the course.

Students are allowed to take class subjects provided in other programs and schools, and in other universities, in addition to the class subjects listed in this table, and the credit for those subjects that the faculty committee of the Mathematics Program certifies is accepted as the required credit for graduation.
The credit for the subjects "Introduction to Mathematics Education I" and "Introduction to Mathematics Education II" that are provided by the School of Education is counted towards the required credit for graduation (for the subject category of "Specialized Subjects").
When the faculty committee of the Mathematics Program allows it, students can take class subjects before the period defined in the class subject table.

＊Students who have earned required credits (refer to the Student Handbook for details) can acquire the type 1 license for junior high school teachers (mathematics), type 1 license for senior high school teachers (mathematics), certification for assistant registered surveyors, and the curator license.

(Liberal Arts Education)

												( )				
Liberal Arts Education Subjects	Peace Science Courses			2		From "Peace Science Courses"	Each 2	Elective/required	○							
	Basic Courses in University	Introduction to University Education		2		Introduction to University Education	2	Required	②							
		Introductory Seminar for First-Year Students		2		Introductory Seminar for First-Year Students	2	Required	②							
	Common Subjects	Area Courses		8		From "Area Courses" (Note 2)	1 or 2	Elective/required	○	○	○	○				
		Foreign Languages	English (Note 3)	Basic English Usage (Note 4)	(0)	Basic English Usage I	1	Free elective	○							
						Basic English Usage II	1			○						
				Communication I	2	Communication IA	1	Required	①							
						Communication IB	1		①							
				Communication II	2	Communication IIA	1	Required		①						
						Communication IIB	1			①						
				Non-English Foreign Languages (Select one language from German, French, Spanish, Russian, Chinese and Korean)	8	Foreign Languages: Basic Studies I	1		○							
						Foreign Languages: Basic Studies II	1	Elective/required	○							
					4	Foreign Languages: Basic Studies III	1			○						
						Foreign Languages: Basic Studies IV	1			○						
						I , II , III and IV must be the same language										
		Information and Data Science Courses			(0)	Elements of Information Literacy (Note 5)	2	Free elective	○							
					2	Exercise in Information Literacy	2	Required	②							
		Health and Sports Courses			2	From "Health and Sports Courses"	1 or 2	Elective/required	○	○						
		Social Cooperation Courses (Note 6)			(0)	From "Social Cooperation Courses"	1 or 2	Free elective	○	○						
		Foundation Courses			6	Linear Algebra I	2	Required	②							
						Seminar in Linear Algebra I	1		①							
						Linear Algebra II	2			②						
						Seminar in Linear Algebra II	1			①						
	Total(Liberal Arts Education Subjects)				32											

(Note 1) The indicated semester represents that in which students typically take the subject. It is permitted to take the subject in the same (first or second) semester in the following year, however, it is required to confirm the details in syllabus for that academic year, because the subject might be provided in a different semester or term.

(Note 2) It is required to earn 4 credits in "Human & Social Science Subjects" and 4 credits in "Natural Science Subjects". Students who want to acquire an educational personnel certification must take the subject "Japanese Constitution" in the "Human & Social Science Subjects".
Credits earned through the subject "Advanced English for Communication", "Foreign Languages: Intensive Studies" and "Overseas Language Seminar (German, French, Spanish, Russian, Chinese, and Korean)" in "Foreign Languages" are accepted as the credits required for "Human & Social Science Subjects".

(Note 3) Achievement in a foreign language skill test might also be accepted as credit. For the details, refer to the description of English subjects in Liberal Arts Education and the item "Credit based on Achievement in Foreign Language Skill Tests" in the Student Handbook.

(Note 4) The credit for "Basic English Usage I" and "Basic English Usage II" is accepted as that for the category of "Any subject".

(Note 5) The credit for "Elements of Information Literacy" is accepted as credit for the category of "Any subject".

(Note 6) The credit of the subject "Social Cooperation Courses" is accepted as credit for the category of "Any subject".

＊Note for the "Specialized Education Subjects" listed in the next page and after

(Note 7) To achieve the 54 credits required for the "Specialized Subjects", it is required to earn 26 or more credits for elective required subjects and free elective subjects, as well as 10 credits for required subjects and 18 credits for elective required subjects.
The credit for the subjects "Introduction to Mathematics Education I" and "Introduction to Mathematics Education II" that are provided in School of Education is counted as credit for the "Specialized Subjects."

(Note 8) For the 11 class subjects of "Specialized Subjects", for which lectures and exercises are provided in pairs, it is required to earn 16 or more credits for 4 or more pairs of subjects.

(Note 9) The subject "Data Science" is provided biannually.

(Note 10) The subject "Network and Algebra" is provided in the 7th or 8th semester.

(Note 11) The subject "Topics in Mathematics" is provided in the form of such subjects as "Topics in Algebra", "Topics in Geometry", "Topics in Analysis" and "Topics in Probability and Statistics".

(Note 12) The classes in "Special Lectures in Mathematics" are provided as an integrated course within a certain period of time (after the 5th semester; mainly after the 7th semester).

(Note 13) Because 128 credits are required for graduation, it is required to earn not only the required credits for each subject category (119 credits in total that consist of 32 credits in Liberal Arts Education Subjects and 87 credits in Specialized Education Subjects), but 128 or more credits in total regardless of the categorization of Liberal Arts Education Subjects and Specialized Education Subjects.
However, the credits for the subjects described below are not accepted as required credit for graduation: For the details of subjects related to educational personnel certification, refer to the list of required credits in "Acquisition of Educational Personnel Certification" in the Student Handbook.
・Any credit for subjects only related to educational personnel certification, except for "Introduction to Mathematics Education I" and "Introduction to Mathematics Education II"
・"Basic Specialized Subjects" and "Specialized Subjects" provided in the other programs of the School of Science (except those that are admitted by the faculty committee of the Mathematics Program)
・"Basic Specialized Subjects" and "Specialized Subjects" provided by the other programs in other schools (except those that are admitted by the faculty committee of the Mathematics Program)

Sheet

Relationships between the evaluation items and class subjects

Subject Classification	Subject Name	Credits	Type of course registration	Grade	Evaluation items																																Total weighted values of evaluation items in
					Knowledge and Understanding												Abilities and Skills										Comprehensive Abilities										
					(1)		(2)		(3)		(4)		(5)		(6)		(1)		(2)		(3)		(4)		(5)		(1)		(2)		(3)		(4)		(5)		
					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	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	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	Peace Science Courses	2	Elective/required	1							100	1																									100
Liberal Arts Education	Introduction to University Education	2	Required	1											100	1																					100
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Required	1	25	1																					25	1	25	1	25	1					100
Liberal Arts Education	Area Courses	8	Elective/required	1 4							100	1																									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 Education	Communication	2	Required	1																			100	1													100
Liberal Arts Education	Communication	2	Required	2																			100	1													100
Liberal Arts Education	Foreign Languages: Basic Studies	1	Elective/required	1																			100	1													100
Liberal Arts Education	Foreign Languages: Basic Studies	1	Elective/required	1																			100	1													100
Liberal Arts Education	Foreign Languages: 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	Elements of Information Literacy	2	Free elective	1																	100	1															100
Liberal Arts Education	Exercise in Information Literacy	2	Required	1																	100	1															100
Liberal Arts Education	Health and Sports Courses	2	Elective/required	1 2																					100	1											100
Liberal Arts Education	Social Cooperation Courses	0	Free elective	1 2											100	1																					100
Liberal Arts Education	Linear Algebra	2	Required	1	100	1																															100
Liberal Arts Education	Seminar in Linear Algebra	1	Required	1	100	1																															100
Liberal Arts Education	Linear Algebra	2	Required	2	100	1																															100
Liberal Arts Education	Seminar in Linear Algebra	1	Required	2	100	1																															100
Specialized Education	Introduction to Mathematics	2	Required	1	100	1																															100
Specialized Education	Introduction to Information Mathematics	2	Elective/required	2									100	1																							100
Specialized Education	Introduction to Physics A	2	Elective/required	1									100	1																							100
Specialized Education	Introduction to Physics B	2	Elective/required	2									100	1																							100
Specialized Education	Introduction to Chemistry A	2	Elective/required	1									100	1																							100
Specialized Education	Introduction to Chemistry B	2	Elective/required	2									100	1																							100
Specialized Education	Introduction to Biological Sciences A	2	Elective/required	1									100	1																							100
Specialized Education	Introduction to Biological Sciences B	2	Elective/required	2									100	1																							100
Specialized Education	Introduction to Earth and Planetary Sciences	2	Elective/required	1									100	1																							100
Specialized Education	Introduction to Earth and Planetary Sciences	2	Elective/required	2									100	1																							100
Specialized Education	English Seminar on Mathematics	1	Elective/required	4																			100	1													100
Specialized Education	Analysis I	2	Required	1	50	1											50	1																			100
Specialized Education	Exercises in Algebra I	1	Required	1	50	1											50	1																			100
Specialized Education	Analysis II	2	Required	2	50	1											50	1																			100
Specialized Education	Exercises in Algebra II	1	Required	2	50	1											50	1																			100
Specialized Education	Analysis III	2	Required	3	50	1											50	1																			100
Specialized Education	Exercises in Algebra III	1	Required	3	50	1											50	1																			100
Specialized Education	Analysis IV	2	Required	4	50	1											50	1																			100
Specialized Education	Exercises in Algebra IV	1	Required	4	50	1											50	1																			100

Subject Classification	Subject N…	…of …e …a	Grade	…n items				Total weight…
				Knowl…	…ies and Skills	Compreher…		
				(2) … (6)	(1) … (3) (4)	(2) … (5)		
				Weighted values of evaluation items in the subject / Weighted values of evaluation items				
Specialized Education	Algebra I							
Specialized Education								
Specialized								

Reg400(i)… (…) (…) (…)] … 4.5… W* n BT /F … 0 G [(3)] TJ ET

Subject Classification	Subject Name	Credits	Type of course registration	Grade	Evaluation items																																Total weighted values of evaluation items in
					Knowledge and Understanding												Abilities and Skills										Comprehensive Abilities										
					(1)		(2)		(3)		(4)		(5)		(6)		(1)		(2)		(3)		(4)		(5)		(1)		(2)		(3)		(4)		(5)		
					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	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	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	Network and Algebra	2	Free elective	7 8					50	1											50	1															100
Specialized Education	Mathematics for Modeling and Simulation	2	Free elective	6					50	1											50	1															100
Specialized Education	Theory of Complex Systems	2	Free elective	7					50	1											50	1															100
Specialized Education	Mathematics for Computation	2	Free elective	8					50	1											50	1															100
Specialized Education	Mathematics Internship	1	Free elective	5																	100	1															100
Specialized Education	Topics in Mathematics	2	Free elective	7 8					100	1																											100

Curriculum Map of Mathematics

	1		2		3		4	

2

3

4