For entrants in FY 2019

Appended Form 1

Specifications for Major Program

Name of School (Program) [School of Pharmaceutical Sciences (Program of Pharmaceutical Sciences)]

Program name (Japanese)	薬学プログラム
(English)	Program of Pharmaceutical Sciences

1. Degree to be obtained: Bachelor of Pharmacy

2. Overview

The Program of Pharmaceutical Science aims to enable students to acquire the deep humanity and wide-ranging intelligence required to become a suitable practitioner in the field of the improvement of human health and welfare, to obtain fundamental knowledge, skills, and attitudes for working as a specialist, and to gain the capability to exercise scientific thinking abilities and creativity. Specifically, this program provides students education to allow them to acquire 1) the fundamental knowledge and skills required to become pharmacists who are capable of understanding and diagnosing a patient's condition, of judging prescriptions, and of taking responsibility for appropriate use of medicines and medical supplies; 2) the advanced skills required for exercising their creative thinking abilities to try to solve new problems actively and autonomously, as well as the opportunity to exercising those skills experimentally; 3) the advanced medical knowledge required to foster skills as pharmacists who have a high level of expertise and are capable of taking part in discussion in team medical care from a scientific point of view; and 4) the ethics and improved communication skills required of a clinical pharmacist.

This program is (highly systematically) designed to educate students to advance to graduate school and to acquire advanced knowledge and skills as expert pharmacists and ethics as medical staff, to join a trainee program in a medical institution to become pharmacists practically engaged in medical work, or to work as a researchers engaged in such fields as the development of new medicine in a pharmaceutical company or experts who work in public offices related to welfare and healthcare, including school pharmacists who are trusted by the community.

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

The Program of Pharmaceutical Science will approve the graduation of, and award the degree bachelor of pharmacy to, students who have acquired the capabilities described below, and earned the required credits defined for the educational course:

1) The fundamental skills and wide-ranging intelligence required for studying pharmacy, such as those related to physics, chemistry, biology, mathematics, and psychology for medical staff;

2) The fundamental knowledge and skills regarding such things as major reactions, separation methods, and structure determination methods, that are required for understanding the reactivity of chemical substances including medicines and biological materials, and the ability to explain and exercise that knowledge and those skills;

3) The fundamental knowledge and skills regarding the structure and mechanisms of function coordination in living bodies that are required for understanding the constitution of the living body at various levels, such as the individual body, an organ in the body, and a cell in the organ, and ability to explain and exercise that knowledge and those skills;

4) The fundamental knowledge, skills, and attitude regarding such matters as the effect of a medicine on a disease, mechanisms of action, and metabolic end result that are required for understanding the processes of the pharmacological

action of medicines, and the ability to explain and exercise that knowledge, those skills, and that attitude;

5) The capability to understand basic and applied knowledge of drug therapy, and to explain the standard methods of drug therapy for major diseases of every organ;

6) Fundamental knowledge, skills, and attitude regarding the effect of medicines and chemical substances on a human being and the effect of living environment and global ecosystem on human health, and the ability to explain and exercise that knowledge, those skills, and that attitude;

7) The fundamental knowledge, skills, and attitude regarding pharmacy itself, laws and institutions related to medicines, and economics and pharmacy businesses that are required for understanding the responsibilities and duties of pharmacists in society, and the ability to explain and exercise that knowledge, those skills, and that attitude;

8) The fundamental knowledge, skills, and attitude for the dispensing, formulation, and explanation of medicine instructions required for working as a member of a medical team, and the ability to explain and exercise that knowledge, those skills, and that attitude;

9) The ability to identify problems, and to indicate a way of solving them, to work as pharmacists who can flexibly cope with various needs of medical workers;

10) The fundamental capability to identify new information and knowledge, and to autonomously improve one's ability, in order to keep up with progress in pharmacology and medical areas; and

11) An understanding of the importance of development of juniors medical staff, and the ability to contribute to it by educating the pharmacists of the next generation.

4. Curriculum policy (policy for arranging and implementing the curriculum)

In the Program of Pharmaceutical Science, based on the program's educational philosophy, the curriculum (educational course) is arranged according to the policies described below in order to develop medical staff who have deep humanity and wide-ranging intelligence.

1) To allow students to acquire fundamental knowledge and basic study ability in a wide variety of areas, the curriculum provides the peace study subjects, fundamental subjects for university education, disciplinary subjects, foreign language subjects, information subjects, health and sports subjects, society-related subjects, and fundamental subjects, structured in such a way as to provide those subjects to the whole university;

2) To allow students to systematically learn the specialized methodology and knowledge, the curriculum provides subjects for early experience, humanism in communication, the structure and characteristics of materials, natural medicine resources, and the mechanisms and functionality of living bodies as specialized fundamental subjects;

3) The curriculum provides subjects regarding the effect of medicines, the pharmacokinetics of medicines, health and environment, the formulation and management of medicines, diseases and pathology, the business of pharmacists, laws related to medicines, and experimentation skills;

4) The curriculum provides a preparatory course for clinical exercises in the second semester in the fourth academic year, as a part of the practical education for pharmacists. Also, clinical exercises are provided for students who pass the common achievement examination after finishing the preparation course;

5) To allow students to integrate acquired knowledge and skills, and develop their scientific thinking abilities for solving problems and creating new value, the curriculum provides detailed guidance and instruction for graduation research that is performed by students as a required subject. Also an environment supportive of the graduation research of junior researchers is promoted;

6) Certain criteria are established for the allocation of students to laboratories, and for qualification for common achievement examinations; and

The achievement in education is evaluated based on grade scores for the subjects, and the level of achievement against the target defined for the Program of Pharmaceutical Science.

5. Start time and acceptance conditions

Students select (start) this program in the first year.

6. Obtainable qualifications

a) Qualification for national examination for pharmacists

b) Technical supervisor in the office for the manufacture, import, and sale of medical devices, technical manager in a waste disposal plant, pollution control manager related to noise, dust, and vibration pollution, technical manager of environmental sanitation for buildings, and technical administrator for waterworks

7. Class subjects and their contents

For class subjects, refer to the subject table in Sheet 1. (The subject table is to be attached.)

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

8. Academic achievement

The evaluation criteria are specified for each evaluation item for academic achievement, and the achievement level against these criteria is designated for each academic year.

The academic achievement, from when the student enters our university to the end of the last semester, is represented based on the average of evaluation scores for each evaluation item. The evaluation score for each subject is converted to a numerical value (S = 4, A = 3, B = 2, and C = 1) and the evaluation standard for the academic achievement is determined using these values while applying weightings.

Achievement evaluation	Numerical conversion
S (Excellent:90 or more points)	4
A (Very good: 80 - 89 points)	3
B (Good: 70 - 79 points)	2
C (Passed: 60 - 69 points)	1
Academic achievement	Evaluation standard
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 Sheet 2.

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

* Refer to the curriculum map in Sheet 4.

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

○ Purpose

To enable students, through a topic of research, to acquire the capabilities for identifying something new, and solving problems based on a scientific point of view, required for comprehensively understanding pharmaceutical knowledge and contributing to the medical realm, as well as the attitude to endeavor to improve their capabilities throughout their lives.

Students present the results of their research at the graduation thesis presentation assembly that is held in the middle of December in the sixth year.

○ Overview

1. Attitude required for research activity

Students are expected to understand the basic philosophy and attitude required for joining in research activities in the future.

2. Studying research activity

Students are expected to experience a series of research processes to achieve the aims of the research, and to acquire the basic knowledge, skills, and attitude required for research activities, in order to become capable of performing research by themselves in the future.

3. Encounter with undiscovered things

Students are expected to experience pleasure in research activities that consists of the joy of invention and discovery in their own research.

○ Student allocation timing and method

Students are allocated to the laboratory in the second semester of the third year. The allocation method and requirements are defined separately.

10. Responsibility

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

・ The faculty committee of the Program of Pharmaceutical Science (head: Koichiro Ozawa (who is in charge of educational affairs) is engaged in the processes of "plan" and "do."

・ For the processes of "check" and "act", the dean of the school consults with the responsible committee and carries out the required actions while taking the results of consultations into consideration.

(2) Evaluation of the program

・ Perspectives for evaluation of the program

This program is evaluated from the perspectives of "educational effectiveness" and "social effectiveness." The "educational effectiveness" is evaluated by the effects of implementation of the program on the educational achievement of students, based on such things as evaluation scores, evaluation of achievement, and GPA. The "social effectiveness" is evaluated by the social effectiveness of the program.

・Evaluation method (also describes relation to class evaluation)

In this program, achievement in the program is evaluated from the perspectives described above for students in the second semester of the sixth year. Also, it is evaluated for each year, taking evaluation by students into consideration by conducting questionnaires for students to evaluate the program each semester.

The "educational effectiveness" is comprehensively evaluated based on such things as the evaluation scores, evaluation of achievement, and GPA of the students who took the program.

The "social effectiveness" is evaluated based on such things as the rate of employment in hospitals, pharmacies, corporations (such as pharmaceutical companies) and public offices that have a close connection with the contents of this program. We regularly request a member of human resources staff in an organization that employs mainly students of this program to evaluate the program. In addition, we request graduates of this program to evaluate their own achievement and that of the program.

・Policy and method for feedback to students

The committee responsible regularly conducts inquiries and interviews of students in order to review and evaluate the program, submits the improvement plans for the program to the education evaluation committee, and reports the results of the plan to the bachelor course committee. Also, individual class subjects are reviewed and evaluated based on such things as evaluation of lectures by students, and the results of program evaluation, in order to improve the program. Results of the processes described above are fed back to students via the MOMIJI service. For comments provided by students in questionnaires for the evaluation of lectures, feedback is provided via the class improvement questionnaire in MOMIJI.

Program of Pharmaceutical Sciences

Type	Subject type	Required No. of credits	Class subjects, etc.	No. of credits	Type of course registration	1st year Spring	1st year Fall	2nd year Spring	2nd year Fall	3rd year Spring	3rd year Fall	4th year Spring	4th year Fall	5th year Spring	5th year Fall
				2	Required			○							
			Introduction to University Education	2	Required	○									
			Introductory Seminar for First-Year Students	2	Required	○									
			Courses in Arts and Humanities/SocialSciences	2	Elective/required	○	○								
		(Note 8)	Courses in Natural Sciences	2	Elective/required		○								
			Communication Seminar I	1		○									
			Communication Seminar II	1			○								
			CommunicationIA	1		○									
			Communication IB	1		○									
			Communication IIA	1			○								
			Communication IIB	1			○								
			Basic Foreign Language I	1		○									
			Basic Foreign Language II	1		○									
			Basic Foreign Language III	1			○								
			Basic Foreign Language IV	1			○								
			Elements of Information Literacy(Note 4)	2	Required	○									
				1or2	Elective/required	○	○								
				1or2	Free elective	○	○								
			Psychology for Medical Care Workers(Note 5)	2			○								
			Statistics	2			○								
			Anatomy for understanding human being I	1			○								
			Anatomy for understanding human being II	1			○								
			Foundation physics for life science(Note 6)	2		○									
			Foundation biology for life science(Note 7)	2		○									
			Species Biology	2		○									
			Basic Calculus	2		○									
			Basic Linear Algebra	2			○								

Table of Registration Standards for Liberal Arts Education Subjects

Program of Pharmaceutical Sciences

Type	Subject type	Lesson Style	Required No. of credits	Class subjects, etc.	No. of credits	Type of course registration	Year in which the subject is taken											
							1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade	
							Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
	Basic Specialized Subjects	Lecture	44	Practical English for Pharmaceutical Students	2	Required			②									
				Introduction to Pharmaceutical Sciences	2			②										
				General Chemistry	2			②										
				Pharmaceutical Analysis	2			②										
				Nuclear Pharmacy	2				②									
				Organic Chemistry IA	1		①											
				Organic Chemistry IB	1		①											
				Biochemistry I	2				②									
				Biochemistry II	2				②									
				Biological Chemistry III	2				②									
				Public Health Chemistry I	2				②									
				Basic Kampo Medicine	2				②									
				Microbiology	2				②									
				Public Health Chemistry II	2				②									
				Pharmaceutical Physical Chemistry	2				②									
				Bio-Analytical Science	2				②									
				[redacted] Chemistry	2					②								
				[redacted]try IV	2					②								
				[redacted]	2					②								
				[redacted]	2					②								
				[redacted]ⅡA	1			①										
				[redacted]ⅡB	1			①										
				[redacted]	2					②								
				[redacted]ology	2								②					
				[redacted]lized Subjects)	44		2	8	22	10			2					
				[redacted]poeia	2												②	
				[redacted]A	1	Required					①							
				[redacted]B	1							①						
				[redacted]ical food science	2	Free elective							2					
				[redacted]Seminar)	6						1	1	2				2	
				[redacted]ence	2	Free elective							2					
				[redacted] Kampo medicine	2						②							
				[redacted]	2						②							
				[redacted]	2						②							
				[redacted]stry	2						②							
				[redacted]rug resistance	2						②							
				[redacted]mistry	2						②							
				[redacted] III	2						②							
				[redacted] Chemistry	2						②							
				[redacted]	2						②							
				[redacted]ceutics	2	Required						②						
				[redacted]	2							②						
				[redacted]ng	2							②						
				[redacted] IV	2							②						
				[redacted]mistry III	2							②						
				[redacted]tics	2							②						
				[redacted]	2							②						
				[redacted]	2								②					
				Clinical Medicine and Pharmacotherapy I	2								②					
				Pharmacotherapy A	2								②					
				AnOutline of Immunology	2								②					

Type	Subject type	Lesson Style	Required No. of credits	Class subjects, etc.	No. of credits	Type of course registration	Year in which the subject is taken											
							1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade	
							Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Specialized Education Subjects	Specialized Subjects	Lecture	60	Clinical Medicine and Pharmacotherapy II	2	Required							②					
				Pharmaceutical Affairs Related Laws	2								②					
				Clinical Pharmacology A	2									②				
				Pharmacotherapy B	2									②				
				Drug Informatics	2									②				
				Clinical Medicine and Pharmacotherapy III	2									②				
				Clinical Pharmacology B	2										②			
				Clinical Pharmacology C	2										②			
				Pharmacoeconomics	2										②			
				Clinical Evaluation	2											②		
			Total(Lecture)		62						18	14	14	8	8			
		Practice	33	Experiments in Analytical Chemistry	1	Required				①								
				Training of Physical Chemistry	1					①								
				Experiments in Organic Chemistry	1					①								
				Experiments of Cellular and Molecular Biology	1					①								
				Experiments of Biological Chemistry	1					①								
				Experiments of Pharmacognosy	1						①							
				Experiments of Microbial Chemistry	1						①							
				Pharmacology Practice	1						①							
				Practice of Pharmaceutics	1						①							
				Experiments of Public health Chemistry	1						①							
				Pharmacy Practice	3									③				
				Clerkship in Clinical Pharmacy A	10										⑩			
				Clerkship in Clinical Pharmacy B	10										⑩			
			Total(Practice)		33					5	5			3	20			
		Special Study for Graduation	10	Special laboratory Works in Pharmaceutical Sciences I	2	Required							②					
				Special laboratory Works in Pharmaceutical Sciences II	2								②					
				Special laboratory Works in Clinical Pharmacy I	2										②			
				Special laboratory Works in Clinical Pharmacy II	2										②			
				Special laboratory Works in Clinical Pharmacy III	2										②			
			Total(Special Study for Graduation)		10								4		6			
			Total(Specialized Subjects)		111					5	24		46		36			
			151	Total(Specialized Education Subjects)	155													

NOTE: The number enclosed in a circle indicates a required subject.

Graduation requirement	Required No. of credits
Liberal Arts Education Subjects	36
Specialized Education Subjects	151
Basic Specialized Subjects	44
Required Subjects	44
Specialized Subjects	107
Required Subjects (Seminar)	4
Free elective subjects (Seminar)	(2)
Free elective subjects (Lecture)	(2)
Required Subjects (Lecture)	60
Required Subjects (Practice)	33
Required Subjects (Special Study for Graduation)	10
Total	187

Academic achievements of Pharmaceutical Sciences Program

Relationships between the evaluation items and evaluation criteria

Academic achievements			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Knowledge and Understanding	(1)	To have a wide range of knowledge of liberal arts as well as basic understanding and knowledge of natural science and social science.	1. Being able to clearly explain from medical point of view about general education subjects along with natural science and social science. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to clearly explain about general education subjects along with natural science and social science. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain about general education subjects along with natural science and social science. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(2)	The basic knowledge and understanding of basic structures, physical characters and reaction of medicine and other inorganic and organic compounds. ●quality ⑤	1. Being able to explain clearly from medical point of view about the basic structure, physical characteristics and reaction of medicine and inorganic and organic compounds. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to explain clearly about the basic structure, physical characteristics and reaction of medicine and inorganic and organic compounds. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain about the basic structure, physical characteristics and reaction of medicine and inorganic and organic compounds. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(3)	Knowledge and understanding of the biological maintenance system of homeostasis and the ability to adjust to the environment. ●quality ⑤	1. Being able to clearly explain from medical point of view about maintenance mechanism of ecosystem homeostasis and dynamic adjustment. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to clearly explain about maintenance mechanism of ecosystem homeostasis and dynamic adjustment. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain about maintenance mechanism of ecosystem homeostasis and dynamic adjustment. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(4)	Fundamental knowledge・understanding about proper drug treatment for major diseases related to various organ. ●quality ⑥	1. Being able to comprehensively explain appropriate medication to major diseases relating to various organs from medical point of view. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to comprehensively explain appropriate medication to major diseases relating to various organs. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain appropriate medication to major diseases relating to various organs. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(5)	Understanding concerning preservation of the eco system and life environment, causes of environmental pollutants, and their influences on humans. ●quality ⑦	1. Being able to explain from medical point of view about ecosystem, preservation of living environment, components of environmental contamination, and human effects. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to clearly explain about ecosystem, preservation of living environment, components of environmental contamination, and human effects. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain from about ecosystem, preservation of living environment, components of environmental contamination, and human effects. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(6)	Knowledge and understanding about rational analyses of pharmacokinetics in order to to understand quantitatively madicinal effects or side effects. ●quality ⑥	1. Being able to comprehensively explain from medical point of view about the logical analysis of pharmacokinetics to understand medical effects and side effects quantitatively.	1. Being able to comprehensively explain the logical analysis of pharmacokinetics to understand medical effects and side effects quantitatively. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain the logical analysis of pharmacokinetics to understand medical effects and side effects quantitatively. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(7)	The knowledge and understanding of communication with medical teams relating to medication. ●quality ③ ④	1. Being able to make communication with other medical staff on medication as a member of medical team. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to make communication with other medical staff on medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain to other medical staff on medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.

Academic achievements			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Knowledge and Understanding	(8)	Improving English comprehension to acquire capacity of medical or chemical English.	The level of achievement will be assessed based on a formula that includes the average points calculated based on the student's TOEIC score and an evaluation in class. 80% is minimum.	The level of achievement will be assessed based on a formula that includes the average points calculated based on the student's TOEIC score and an evaluation in class. 70% is minimum.	The level of achievement will be assessed based on a formula that includes the average points calculated based on the student's TOEIC score and an evaluation in class.
	(9)	The ability of considering basic pharmacological effects of medicine to chemical structure. ●quality ⑤	1. Being able to explain basic medical effects relating to chemical structures of medicine. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to enumerate and explain basic medical effects and chemical structures of medicine. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain basic medical effects and chemical structures of medicine. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(10)	Abilities・skills of citing speculated major diseases from aberration of clinical test values. ●qualities⑥	1. Being able to enumerate and explain major diseases assumed from abnormal clinical scores. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to enumerate and explain basic points of major diseases assumed from abnormal clinical scores. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain basic points of major diseases assumed from abnormal clinical scores. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
Abilities and Skills	(1)	Abilities of collecting necessary information of drug treatment her/him self. ●quality ⑥	1. Being able to collect necessary information on medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to enumerate and explain basic points necessary for medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain basic points necessary for medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(2)	Being able to search for toxic doses, targeted organs, symptoms of poisoning, emergency procedure and detoxication of chemical substances. ●quality ⑦	1. Being able to explain and search for measures on poisoning, targeted organs, poisoning symptoms, emergency treatments and detoxification of chemical substances. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to search for measures on poisoning, targeted organs, poisoning symptoms, emergency treatments and detoxification of chemical substances. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain search measures on poisoning, targeted organs, poisoning symptoms, emergency treatments and detoxification of chemical substances. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(3)	Abilities・skills of thinking ways of coping to reduce harmful effects(side effects) of madicine. ●quality ⑤	1. Being able to enumerate basic matters relating to measures to decrease harmful effects (side effects) of medicine and conduct ways of solution. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to enumerate basic matters relating to measures to decrease harmful effects (side effects) of medicine and explain ways of solution. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to enumerate basic matters relating to measures to decrease harmful effects (side effects) of medicine and explain them. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(4)	To be able to handle major analysis methods written in the Japanese Pharmacopoeia. ●quality ⑤	1. Being able to construct experimental ways and analyze representative official medicine of Japanese Pharmacopoeia. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to analyze representative official medicine of Japanese Pharmacopoeia. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to analyze representative official medicine of Japanese Pharmacopoeia. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(5)	Using available compounds as starting materials, to be able to handle organic synthesis in order to chemically transform medicine into a target substance. ●quality ⑤	1. Being able to plan organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get and synthesize them. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to conduct organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to use basic techniques of organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.

Academic achievements			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Abilities and Skills	(6)	Using available compounds as starting materials, to be able to handle organic synthesis in order to chemically transform medicine into a target substance. ●quality ⑤	1. Being able to plan organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get and synthesize them. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to conduct organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to use basic techniques of organic synthesis to have chemical conversion into desired compounds including medicine from compounds hard to get. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(7)	Ability and skills to measure drug blood level concerning major drugs. ●quality ⑥	1. Being able to construct experiment plan to measure representative drug blood level and measure them. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to measure representative drug blood level. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to conduct basic techniques to measure representative drug blood level. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(8)	The ability and skills of communication with medical teams relating to medication. ●quality ③ ④	1. Being able to make communication with other medical staff on medication as a member of medical team. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to make communication with other medical staff on medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain to other medical staff on medication. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(9)	The ability and skills to appropriately deal with contraindication or inappropriate treatments of medicine. ●quality ⑥	1. Being able to appropriately deal with contraindications or inappropriate prescription of medicine by themselves. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to appropriately deal with contraindications or inappropriate prescription of medicine. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to explain appropriate measures to contraindications or inappropriate prescription of medicine. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
Attitudes	(1)	Self-betterment of character formation as a medical professional : the appropriate action and attitude being aware of that a pharmacist is a professional relating to human life. The knowledge and understanding to have communication not only with ailing people but with other medical staff in a medical team. ●quality ① ② ③ ④ ⑨	1. Being aware that a pharmacist is a professional relating to human life, being able to have an attitude to take the appropriate mind and make appropriate communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being aware that a pharmacist is a professional relating to human life, Bing able to have an attitude to take the appropriate mind and make communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being aware that a pharmacist is a professional relating to human life, having had an attitude to take the appropriate mind and make communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(2)	Ability to be a pharmacist who is relied on not only by a medical team but also by citizens; the ability to be considerate of patients. ●quality ① ② ④	1. Being able to always keep the existence of patients and take action to become a reliable pharmacist not only from medical teams but also from national people. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to always keep the existence of patients and try to take action to become a reliable pharmacist not only from medical teams but also from national people. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to always keep the existence of patients and explain necessary matters to become a reliable pharmacist not only from medical teams but also from national people. 2. The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.

Academic achievements			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Comprehensive Abilities	(1)	Comprehensive problem-solving ability and educational ability: Concerning the influences caused by numerous chemical substances existing on the earth, to be able to analyze and argue about the survival of the human race. Also, to have the ability and skills to give instruction to youth. ●quality ⑤ ⑩	1. Being able as a pharmacist or medical researcher to analyze effects of various kinds of chemical substances on earth to humans, generally estimate ways of survival of humans, actively try to find the solution of the issues and advise the next generation. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able as a pharmacist or medical researcher to analyze effects of various kinds of chemical substances on earth to humans and try to find solution for survival of humans, and advise the next generation. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Having acquired an attitude as a pharmacist or medical researcher to analyze effects of various kinds of chemical substances on earth to humans and try to find solution for survival of humans, and being able to advise the next generation. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(2)	Self-betterment of character formation as a medical professional : the appropriate action and attitude being aware of that a pharmacist is a professional relating to human life. The knowledge and understanding to have communication not only with ailing people but with other medical staff in a medical team. ●quality ① ② ③ ④ ⑨	1. Being aware that a pharmacist is a professional relating to human life, being able to have an attitude to take the appropriate mind and make appropriate communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being aware that a pharmacist is a professional relating to human life, Bing able to have an attitude to take the appropriate mind and make communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being aware that a pharmacist is a professional relating to human life, having had an attitude to take the appropriate mind and make communication not only with ailing people but with patients and other medical staff as a member of a medical team. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.
	(3)	The research ability: the ability to select issues to be solved in the professional field of pharmacist and carry out measures and research to solve the issues. ●quality ⑧	1. Being able to select issues to be solved in the professional area of pharmacist, plan the ways of solution by themselves and conduct the research. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 80%.	1. Being able to select issues to be solved in the professional area of pharmacist and conduct ways or research to solve the issues. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 70%.	1. Being able to conduct measures or research to solve issues to be solved in the professional area of pharmacist. 2.The learning attainment level is calculated as an average evaluation of grades based on designated formulae. The standard is more than 60%.

Role of liberal arts education in this major program

The liberal arts education in this program aims to build the academic foundation required for the specialized education, foster the ethics required by medical staff, and develop the linguistic ability required for coping with globalization and having a concern for peace. Also, students are expected to develop their scientific intelligence and capabilities for problem solving based on their ability to collect, analyze, and criticize information through the liberal arts education in this program. Through this education, students are enabled to foster a deep humanity and wide-ranging intelligence.

● Fundamental qualities required for pharmacists

① Attitude as a pharmacist
② Viewpoint oriented to patients and ordinary citizens
③ Communication skills
④ Participation in team medical care
⑤ Basic scientific knowledge and skills
⑥ Practical capabilities regarding pharmacotherapy
⑦ Practical capabilities for health and medical care in the local community
⑧ Research ability
⑨ Self-improvement
⑩ Educational skills

Curriculum Map of Pharmaceutical Sciences Program

Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester
Liberal Arts Education Subjects GPA	Liberal Arts Education Subjects GPA	Peace Science Courses(◎)	Training of Physical Chemistry(◎)								
Introduction to University Education(◎)	Area Courses(○)										
Area Courses(○)	Introduction to Pharmaceutical Sciences(◎)										
	General Chemistry(◎)										
Foundation Courses(○)	Foundation Courses(○)	Pharmaceutical Physical Chemistry(◎)	Natural Products Chemistry(◎)	Biophysical Chemistry(◎)							Japanese Pharmacopoeia(◎)
Organic Chemistry Ⅰ A(◎)	General Chemistry(◎)	Nuclear Pharmacy(◎)	Training of Physical Chemistry(◎)	Medicinal Organic Chemistry(◎)							
Organic Chemistry Ⅰ B(◎)	Organic Chemistry Ⅱ A(◎)	Bio-Analytical Science(◎)	Experiments in Organic Chemistry(◎)	Organic Chemistry Ⅲ(◎)	Industrial Pharmaceutics(◎)	Pharmaceutical Affairs Related Laws(◎)					
	Organic Chemistry Ⅱ B(◎)	Basic Kampo Medicine(◎)		Research Practice A(◎)	Organic Chemistry Ⅳ(◎)						
				Herbal medicine & Kampo medicine(◎)	Research Practice B(◎)						
					Pharmacology Ⅲ(◎)						
Foundation Courses(○)	Foundation Courses(○)	Biochemistry Ⅰ(◎)	Pharmacology Ⅰ(◎)	Biochemistry Ⅵ(◎)	Cell Motility(◎)	AnOutline of Pathology(◎)	Clinical Pharmacology A(◎)			Clinical Pharmacology B(◎)	Japanese Pharmacopoeia(◎)
		Biochemistry Ⅱ(◎)	Biological Chemistry Ⅳ(◎)	Physiological Chemistry(◎)	Genetic Engineering(◎)	Research PracticePractice for clinical food science(△)	Pharmacotherapy B(◎)			Clinical Pharmacology C(◎)	
		Biological Chemistry Ⅲ(◎)	Biochemistry Ⅴ(◎)	Aeaci	mpo Medicine(◎)	Clinical food science(△)	Clinical Medicine and Pharmacotherapy Ⅲ(◎)				
		Microbiology(◎)		Experiments of Microbial Chemistry(◎)		Clini Ccr	ogW c	Peacj mpo Medicine(◎)			

Curriculum Map of Pharmaceutical Sciences Program

Sheet 4

Academic achievements / Evaluation items	1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade	
	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester
	Information Courses (◎)	Introduction to Pharmaceutical Sciences (◎)	Microbiology (◎)	Pharmacology I (◎)	Pharmacology II (◎) Research PracticeA (◎) Antibiotics and Drug resistance (◎)	Pharmacology III (◎) Research PracticeB (◎)		Drug Informatics (◎) Pharmacy Practice (◎)			Pharmacoeconomics (◎)	Clinical Evaluation (◎)
				Pharmacology I (◎)			Research PracticePractice for clinical food science (△) Pharmacotherapy A (◎)					
		Introduction to Pharmaceutical Sciences (◎)		Biopharmaceutics (◎)	Pharmacology II (◎) Pharmacokinetics (◎) Antibiotics and Drug resistance (◎)	Biological Statistics (◎)	Pharmacotherapy A (◎)					
		Pharmaceutical Analysis (◎)	Nuclear Pharmacy(◎) Bio-Analytical Science (◎)	Experiments of Biological Chemistry (◎)	Experiments of Pharmacognosy (◎) Experiments of Microbial Chemistry (◎)		Pharmaceutical Affairs Related Laws (◎)					Japanese Pharmacopoeia (◎)
							Pharmaceutical Affairs Related Laws (◎)	Pharmacy Practice (◎)				Japanese Pharmacopoeia (◎)
	Organic Chemistry Ⅰ A (◎) Organic Chemistry Ⅰ B (◎)	Organic Chemistry Ⅱ A (◎) Organic Chemistry Ⅱ B (◎)		Experiments in Organic Chemistry (◎)	Organic Chemistry Ⅲ (◎) Research PracticeA (◎)							
					Organic Chemistry Ⅳ (◎) Research PracticeB (◎)							
					Research PracticeA (◎) Practice of Pharmaceutics (◎)							
					Pharmacology Practice (◎)	Research PracticeB (◎)	Clinical Pharmacy (◎) Clinical Medicine and Pharmacotherapy I (◎) Clinical Medicine and Pharmacotherapy II (◎)	Clinical Pharmacology A (◎) Pharmacotherapy B (◎) Clinical Medicine and Pharmacotherapy III (◎)			Clinical Pharmacology B (◎) Clinical Pharmacology C (◎)	

Curriculum Map of Pharmaceutical Sciences Program

Sheet 4

	Academic achievements / Evaluation items	1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade	
		Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester
Comprehensive Abilities	1. Comprehensive problem-solving ability and educational ability: Concerning the influences caused by numerous chemical substances existing on the earth, to be able to analyze and argue about the survival of the human race. Also, to have the ability and skills to give instruction to youth. ●quality ⑤ ⑩	Introductory Seminar for First-Year Students(◎) Introduction to University Education(◎) Social Cooperation Courses(△)	Social Cooperation Courses(△) Introduction to Pharmaceutical Sciences(◎)			Research PracticeA(◎)	Special laboratory Works in Pharmaceutical Sciences Ⅰ(◎) Special laboratory Works in Pharmaceutical Sciences Ⅱ(◎) Research PracticeB(◎)			Special laboratory Works in Clinical Pharmacy Ⅰ(◎) Special laboratory Works in Clinical Pharmacy Ⅱ(◎) Special laboratory Works in Clinical PharmacyⅢ(◎)			
	2. Self-betterment of character formation as a medical professional : the appropriate action and attitude being aware of that a pharmacist is a professional relating to human life. The knowledge and understanding to have communication not only with ailing people but with other medical staff in a medical team. ●quality ① ② ③ ④ ⑨	Introductory Seminar for First-Year Students(◎) Information Courses(◎) Introduction to University Education(◎) Social Cooperation Courses(△)	Social Cooperation Courses(△) Introduction to Pharmaceutical Sciences(◎)					Pharmacy Practice(◎)		Clerkship in Clinical PharmacyA(◎) Clerkship in Clinical PharmacyB(◎)			
	3. The research ability: the ability to select issues to be solved in the professional field of pharmacist and carry out measures and research to solve the issues. ●quality ⑧	Introductory Seminar for First-Year Students(◎) Information Courses(◎) Introduction to University Education(◎) Social Cooperation Courses(△)	Social Cooperation Courses(△) Introduction to Pharmaceutical Sciences(◎)	Nuclear Pharmacy(◎)	Experiments of Cellular and Molecular Biology(◎)	Research PracticeA(◎) Experiments of Public health Chemistry(◎) Experiments of Microbial Chemistry(◎)	Special laboratory Works in Pharmaceutical Sciences Ⅰ(◎) Special laboratory Works in Pharmaceutical Sciences Ⅱ(◎) Research PracticeB(◎)			Special laboratory Works in Clinical Pharmacy Ⅰ(◎) Special laboratory Works in Clinical Pharmacy Ⅱ(◎) Special laboratory Works in Clinical PharmacyⅢ(◎)			

Liberal Arts Education Subjects　Basic Specialized Subjects　Specialized Education Subjects　Graduation Thesis　Clerkship in Clinical Pharmacy　(◎)Required　(○)Elective/required　(△)Free elective

● Fundamental qualities required for pharmacists

① Attitude as a pharmacist
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⑥ Practical capabilities regarding pharmacotherapy
⑦ Practical capabilities for health and medical care in the local community
⑧ Research ability
⑨ Self-improvement
⑩ Educational skills