

**Graduate School of Medicine and
Pharmaceutical Sciences for Education**

**Ph.D. Program in the Department of
Pharmaceutical Sciences**

Admission Guidelines
(Second Recruitment)

For Admission in April 2018

General Admission

Special Admission for Working Students

Special Admission for International Students

November 2017

University of Toyama

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Although recruitment of students for the PhD program (for entrance in April 2018) in the Department of Pharmaceutical Sciences of the Graduate School of Medicine and Pharmaceutical Sciences for Education of this university is implemented twice, the second recruitment of students will be implemented based on these guidelines.
The first recruitment of students was implemented at the August 2017.

Admission Policy

Department of Pharmaceutical Sciences

The Ph.D. Program in the Department of Pharmaceutical Sciences focuses on education and research that nurture the ability of students to work as independent researchers in the field of basic pharmacy. The program also fosters other abilities needed to perform highly specialized tasks. The department aims to educate researchers and pharmaceutical educators who can conduct cutting-edge research and keep up with the latest information and technologies in the constantly advancing fields of natural science. The program welcomes applicants who would like to succeed globally, not only in the conventional academic areas of pharmaceutical science but also at the cutting edge of emerging interdisciplinary studies.

General Admission

1. Capacity

Department	Number of Students Accepted	Remarks
Pharmaceutical Sciences	A few	Includes the number of students recruited for working students and international students.

Note: Applicants should consult with the academic advisor for their desired area of study prior to submitting their application.

2. Eligibility

The following persons are eligible to apply:

- (1) Persons who hold a master's degree or a professional degree (under Article 104, Paragraph 1 of the School Education Act and 1953 Ministry of Education Ordinance No. 9, Article 5, Paragraph 2), or persons scheduled to fulfill said requirement by March 2018
- (2) Persons who hold a degree equivalent to a master's degree or a professional degree in a foreign country, or persons scheduled to fulfill said requirement by March 2018
- (3) Persons who hold a degree equivalent to a master's degree or a professional degree after having completed, while residing in Japan, the required courses in distance education conducted by a school outside of Japan, or persons scheduled to fulfill said requirement by March 2018
- (4) Persons who hold a degree equivalent to a master's degree or a professional degree after having completed, while residing in Japan, a program at an educational institution that provides courses for a foreign graduate school accredited under the school education system of the relevant foreign country and that is specifically designated as such by the Minister of Education, Culture, Sports, Science and Technology of Japan, or persons scheduled to fulfill said requirement by March 2018
- (5) Persons designated by the Minister of Education, Culture, Sports, Science and Technology of Japan (1989 Ministry of Education Notification No. 118)
 - a. Persons who, after graduating from university, engaged in at least two years of research at a university or research institute and, based on the resulting research achievements, have been recognized as having academic ability equal to or higher than that of a person holding a master's degree or professional degree
 - b. Persons who, after completing a 16-year course of study in the educational institutions of a foreign country, or after completing a 16-year course of study in

the educational institutions of the relevant foreign country by taking in Japan the required courses in distance education conducted by a school outside of Japan, engaged in at least 2 years of research at a university or research institute and, based on the resulting research achievements, have been recognized by the Graduate School of Medicine and Pharmaceutical Sciences for Education as having academic ability equal to or higher than that of a person holding a master's degree or professional degree

- (6) Persons who are 24 years of age or older at the time of entrance, and after having undergone the preliminary qualification screening and have been determined to have a level of academic ability equal to or higher than that of a person holding a master's degree or professional degree
- (7) Persons who hold or are expecting to obtain a master's degree or equivalent by the end of March 2018, after completion of a course at the United Nations University (hereinafter referred to as UNU) as prescribed in Article 1 paragraph 2 of the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the resolution of the General Assembly of the United Nations on December 11, 1972.
- (8) Persons who have been recognized by the Graduate School of Medicine and Pharmaceutical Sciences for Education as having academic ability equal to or higher than that of a person holding a master's degree after having completed the required course at the United Nations University or an educational institution in a foreign country described in (4) and who have passed the examination or screening prescribed in Article 16 paragraph 2 of the Rules on Graduate Schools, or the equivalent of the examination or screening.

Note: Applicants who fall into categories (5),(6)or(8) are required to undergo preliminary qualification screening in advance. Please refer to Information for All Applicants, 1 Application Procedures, (4) Application for Approval of Eligibility.

3. Selection Method

Applicants are selected on the basis of the results of a written examination and an oral examination, as well as an evaluation of academic transcripts.

(1) Written Examination

- Specialized subjects: Applicants select one subject from among Pharmacology, Biochemistry, Organic Chemistry, Physical Chemistry, Pharmaceutics and Pharmacognosy.
- Foreign language: English (Specialized)

(2) Oral Examination

An oral examination on the master's thesis, related research papers, and other specialized subjects is conducted.

(3) Examination Schedule and Venue

Date	Time	Subject	Venue
Feb. 9 (Friday), 2018	9:30 ~ 11:30	Specialized subjects	University of Toyama Sugitani Campus (Medicine and Pharmaceutical Sciences), 2630 Sugitani, Toyama City, Toyama
	13:00 ~ 14:00	Foreign language (English (Specialized))	
	15:00 ~ (planned)	Oral examination	

Note: The starting time for the oral examination is subject to change, depending on the number of applicants. Should the starting time change, applicants will be notified when examination admission cards are sent.

Special Admission for Working Students

1. Capacity

Department	Number of Students Accepted	Remarks
Pharmaceutical Sciences	A few	

Notes:

- Applicants should consult with the academic advisor for their desired area of study prior to submitting their application.
- Working students are given special consideration, including scheduling of classes and research guidance in the evenings or at other specific times to avoid conflicts with work schedules, if considered necessary from an educational standpoint. This special consideration is given in accordance with “special cases with regard to the method of education stipulated in Article 14 of the Requirements for Establishing Graduate Schools”.

2. Eligibility

Persons who work in a variety of research institutions, educational institutions, or in companies as professionals such as researchers, or who will work for such institutions or companies beginning in April 2018, and to whom any of the following items applies are eligible to apply for admission.

- (1) Persons who hold a master’s degree or a professional degree (under Article 104, Paragraph 1 of the School Education Act and 1953 Ministry of Education Ordinance No. 9, Article 5, Paragraph 2), or persons scheduled to fulfill said requirement by March 2018
- (2) Persons who hold a degree equivalent to a master’s degree or a professional degree in a foreign country, or persons scheduled to fulfill said requirement by March 2018
- (3) Persons who hold a degree equivalent to a master’s degree or a professional degree after having completed, while residing in Japan, the required courses in distance education conducted by a school outside of Japan, or persons scheduled to fulfill said requirement by March 2018
- (4) Persons who hold a degree equivalent to a master’s degree or a professional degree after having completed, while residing in Japan, a program at an educational institution that provides courses for a foreign graduate school accredited under the school education system of the relevant foreign country and that is specifically designated as such by the Minister of Education, Culture, Sports, Science and Technology of Japan, or persons scheduled to fulfill said requirement by March 2018
- (5) Persons designated by the Minister of Education, Culture, Sports, Science and Technology of Japan (1989 Ministry of Education Notification No. 118)
 - a. Persons who, after graduating from university, engaged in at least two years of research at a university or research institute and, based on the resulting research achievements, have been recognized as having academic ability equal to or higher than that of a person holding a master’s degree or professional degree
 - b. Persons who, after completing a 16-year course of study in the educational institutions of a foreign country, or after completing a 16-year course of study in the educational institutions of the relevant foreign country by taking in Japan the required courses in distance education conducted by a school outside of Japan, engaged in at least 2 years of research at a university or research institute and, based on the resulting research achievements, have been recognized by the Graduate School of Medicine and Pharmaceutical Sciences for Education as having academic ability equal to or higher than that of a person holding a master’s degree or professional degree

- (6) Persons who are 24 years of age or older at the time of entrance, and after having undergone the preliminary qualification screening and have been determined to have a level of academic ability equal to or higher than that of a person holding a master's degree or professional degree
- (7) Persons who hold or are expecting to obtain a master's degree or equivalent by the end of March 2018, after completion of a course at the United Nations University (hereinafter referred to as UNU) as prescribed in Article 1 paragraph 2 of the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the resolution of the General Assembly of the United Nations on December 11, 1972.
- (8) Persons who have been recognized by the Graduate School of Medicine and Pharmaceutical Sciences for Education as having academic ability equal to or higher than that of a person holding a master's degree after having completed the required course at the United Nations University or an educational institution in a foreign country described in (4) and who have passed the examination or screening prescribed in Article 16 paragraph 2 of the Rules on Graduate Schools, or the equivalent of the examination or screening.

Note: Applicants who fall into categories (5),(6)or(8) are required to undergo preliminary qualification screening in advance. Please refer to Information for All Applicants, 1 Application Procedures, (4) Application for Approval of Eligibility.

3. Selection Method

Applicants are selected on the basis of the results of a written examination and an oral examination, as well as an evaluation of academic transcripts.

(1) Written Examination

- Specialized subjects: Applicants select one subject from among Pharmacology, Biochemistry, Organic Chemistry, Physical Chemistry, Pharmaceutics and Pharmacognosy.
- Foreign language: English (Specialized)

(2) Oral Examination

An oral examination on the master's thesis, related research papers, and work experience is conducted.

(3) Examination Schedule and Venue

Date	Time	Subject	Venue
Feb. 9 (Friday), 2018	9:30 ~ 11:30	Specialized subjects	University of Toyama Sugitani Campus (Medicine and Pharmaceutical Sciences), 2630 Sugitani, Toyama City, Toyama
	13:00 ~ 14:00	Foreign language (English (Specialized))	
	15:00 ~ (planned)	Oral examination	

Note: The starting time for the oral examination is subject to change, depending on the number of applicants. Should the starting time change, applicants will be notified when examination admission cards are sent.

Special Admission for International Students

1. Capacity

Department	Number of Students Accepted	Remarks
Pharmaceutical Sciences	A few	

Note: Applicants should consult with the academic advisor for their desired area of study prior to submitting their application.

2. Eligibility

Persons of foreign nationality to whom any of the following items applies are eligible to apply for admission.

- (1) Persons who hold or expect to obtain a master's degree or professional degree in a foreign country by March 2018.
- (2) Persons who are 24 years of age or older at the time of entrance, and after having undergone the preliminary qualification screening and have been determined to have a level of academic ability equal to or higher than that of a person holding a master's degree or professional degree

Note: Applicants to whom (2) above applies are required to undergo a preliminary qualification screening in advance. Please refer to (4) Application for Approval of Eligibility in "Information for All Applicants"

3. Selection Method

Applicants are selected on the basis of the results of a written examination and an oral examination, as well as an evaluation of academic transcripts.

(1) Written Examination

- Specialized subjects: Applicants select one subject from among Pharmacology, Biochemistry, Organic Chemistry, Physical Chemistry, Pharmaceutics and Pharmacognosy.
- Foreign language: English (Specialized)

(2) Oral Examination

An oral examination on the master's thesis, related research papers, and other specialized subjects is conducted.

(3) Examination Schedule and Venue

Date	Time	Subject	Venue
Feb. 9 (Friday), 2018	9:30 ~ 11:30	Specialized subjects	University of Toyama Sugitani Campus (Medicine and Pharmaceutical Sciences), 2630 Sugitani, Toyama City, Toyama
	13:00 ~ 14:00	Foreign language (English (Specialized))	
	15:00 ~ (planned)	Oral examination	

Note: The starting time for the oral examination is subject to change, depending on the number of applicants. Should the starting time change, applicants will be notified when examination admission cards are sent.

Information for All Applicants

1. Application Procedure

(1) Method of Application

After paying the examination fee by bank remittance, write the applicable item from 2) below on an envelope in red ink and post the application documents by registered express mail.

1) Application Period

From December 11 (Monday), 2017 to January 5 (Friday), 2018 (as indicated by postmark)

Mailing address: Educational Affairs Division of Medicine and Pharmaceutical Sciences Majors (in charge of admission), University of Toyama, 2630 Sugitani, Toyama 930-0194

For information on the Method of Examination Fee Payment, refer to (3) Method of Examination Fee Payment.

Students currently enrolled in University of Toyama graduate schools who seek to enroll in the Graduate School of Medicine and Pharmaceutical Sciences for Education (Ph.D. Program) are not required to pay the examination fee.

2) Items to Be Written on the Envelope

- **General Admission**

Contains an application for the Graduate School of Medicine and Pharmaceutical Sciences for Education (Ph.D. Program General Admission)

- **Special Admission for Working Students**

Contains an application for the Graduate School of Medicine and Pharmaceutical Sciences for Education (Ph.D. Program Special Admission for Working Students)

- **Special Admission for International Students**

Contains an application for the Graduate School of Medicine and Pharmaceutical Sciences for Education (Ph.D. Program Special Admission for International Students)

(2) Application Documents

	Documents	Applicable Documents
1)	Application for Admission	Prepared using the University's prescribed form
2)	Certificate of (expected) completion of a master's program	Prepared by the president or dean of the issuing university (graduate school)
3)	Academic transcript from the graduate school of the university which the applicant has graduated	Prepared and sealed by the president or dean of the graduate school of the university
4)	Academic transcript from the undergraduate faculty of the university from which the applicant has graduated	Prepared and sealed by the president or dean of the university (undergraduate faculty)
5)	Master's thesis or equivalent	One copy (Persons applying for eligibility approval and applicants taking the special admission for working students may submit their Research Paper List (Including Academic Conference Presentations) on the prescribed form of the University of Toyama, in lieu of a master's thesis.)

6)	Summary of the above thesis	Two copies Prepare a summary of a maximum length of one page of A-4 size paper that includes the thesis title and the author's name. (When attaching figures, use a separate page, for a maximum length of two pages). Use body text 11 points or larger in size and top, bottom, left, and right margins of at least 20 mm. (Persons applying for eligibility approval and applicants taking the special admission for working students may submit a summary of research and/or work details of a maximum length of 800 words on A-4 size papers in lieu of a thesis summary.)
7)	Examination Admission Card / Photo Identification Card	Prepared using the University's prescribed form. Attach a photograph (upper body photo of the applicant alone taken full face with no head covering within three months of the application (4 cm in length x 3 cm in width)).
8)	Certificate of Examination Fee Transfer	After paying the examination fee at a financial institution using the University's prescribed Examination Fee Remittance Request Form, attach the slip of the Certificate of Transferred Amount (Examination fee) issued by the financial institution to the Certificate of Examination Fee Transfer (University's prescribed form), and submit it along with other documents. Persons currently enrolled in a master's program at the University of Toyama who seek to enroll in the Graduate School of Medicine and Pharmaceutical Sciences for Education (Ph.D. Program) are not required to pay the examination fee.
9)	Letter of Approval for Entrance Examination	Applicants who are enrolled in a graduate school elsewhere than at the University of Toyama or who are employed at a public office or private company are required to submit an approval for examination signed by the dean of their graduate school or their immediate supervisor at work. (No specific format required)
10)	Copy of the Certificate of Residence	Foreign nationals currently residing in Japan should attach a Copy of the Certificate of Residence issued by the city, town, village or special ward in which they reside.
11)	Stamped, self-addressed envelope	Used to post the Examination Admission Card. Please write your name, address, and postal code on a No. 3 long envelope (23.5 cm x 12 cm) and attach postage stamps to the amount of ¥362 yen (special delivery).
12)	Mailing label (used to post the notice of examination results)	Prepared using the University's prescribed form. Write your name, address, and postal code.

(3) Method of Examination Fee Payment

Applicants should pay the ¥30,000 examination fee by the prescribed method not later than 3:00 pm, January 5 (Friday), 2018.

(However, persons falling into any of the following categories are not required to pay the examination fee.)

○ Applicants applying for April 2018 admission

Applicants scheduled to complete a master's program at a University of Toyama Graduate School in March 2018.

Use the University's prescribed form to remit the examination fee at the service counter of a nearby bank, Shinkin Bank, agricultural cooperative, or other financial institution that handles wire transfers.

Payment cannot be made at an automatic teller machine (ATM) or Japan Post Bank.

Examination fees cannot be refunded for any reason except in the following cases:

- 1) The applicant does not apply to the University of Toyama after remitting the examination fee (The applicant does not submit the application documents, or the application documents are not received.)
- 2) Double payment
- 3) Payment exceeding the required amount

Note: When applying to the University of Toyama for an examination fee refund, affix the slip of the Certificate of Transferred Amount (Examination fee) to the designated Examination Fee Refund Request Form, and mail it to the University of Toyama.

Mailing address: Accounting Division, Financial Affairs Division, University of Toyama, 3190 Gofuku, Toyama 930-8555

Telephone: (076) 445-6053 From abroad: +81-76-445-6053

(4) Application for Approval of Eligibility

Individual eligibility screening is conducted for persons who seek to apply based on eligibility qualifications (5),(6)or(8) qualification (2) in the case of the special admission for international students). Applicants should submit the following documents to the Educational Affairs Group of Medicine and Pharmaceutical Sciences Majors (in charge of admission), Student Academic Affairs Division, University of Toyama by December 1 (Friday), 2017.

- Eligibility Approval Screening Form (University of Toyama prescribed form)
- Academic transcript and certificate of graduation from the school last attended
- Summary of research and work details
- Research Paper List (Including Academic Conference Presentations)
(University of Toyama prescribed form)

Applicants will be notified of the results of eligibility screening by December 8(Friday), 2017.

(5) Advance Consultation for Applicants with a Disability

Since applicants with a disability may require special consideration when taking the entrance examination or attending school, they are requested to consult with the Educational Affairs Group of Medicine and Pharmaceutical Sciences Majors (in charge of admission), University of Toyama in advance.

At the time of consultation, applicants may be requested to submit a document containing the following matters and a doctor's certificate.

- Type and degree of disability
- Matters requiring special consideration at the time of the entrance examination
- Matters requiring special consideration at the time of school attendance
- Circumstances of daily life and other matters for reference

1) Consultation deadline: December 1 (Friday), 2017.

2) Contact information: Educational Affairs Group of Medicine and Pharmaceutical Sciences Majors (in charge of admission), University of Toyama, 2630 Sugitani, Toyama 930-0194

Telephone: (076) 434-7658 From abroad: +81-76-434-7658

2. Notification of Acceptance

The examination numbers of successful applicants will be posted at the front entrance of the University of Toyama Sugitani Campus Faculty of Pharmacy and Pharmaceutical Sciences Bldg. at 3:00 pm on February 23 (Friday), 2018, and the successful applicants will be notified. Telephone and facsimile inquiries will not be accepted.

3. Admission Procedure

The enrollment procedure is as follows. Successful applicants will be given more details.

(1) Enrollment Date

For Admission in April 2018: March 22 (Thursday), 2018 (planned)

(2) Place: University of Toyama Sugitani Campus

(3) Documents Required for Admission

Notice of Acceptance, color photograph (4 cm in length x 3 cm in width), written pledge of school enrollment (University of Toyama prescribed form)

(4) Expenses Required for Admission

a) Admission fee: ¥282,000 (provisional amount)

Notes: 1) The above admission fee is a provisional amount. Should the admission fee be revised, the new admission fee will become effective at the time of the revision.

2) Once paid, admission fees cannot be refunded for any reason.

b) Other matters

1) In cases where payment of the admission fee is judged to be difficult, after screening an exemption may be granted, or collection may be postponed.

2) Tuition is paid after admission. Information on the tuition amount and payment method is provided at the time of enrollment.

Reference information: Tuition for the 2017-2018 academic year is ¥535,800.

3) Scholarships are available through the Admission Office.

4) Students are required to pay the cost of Personal Accident Insurance for Students Pursuing Education and Research and other items separately.

(5) Cautionary Statement

Persons who fail to complete the admission procedure by the deadline will be considered to have declined admission.

4. Privacy Policy

Personal information held by the University is handled in accordance with the Act on the Protection of Personal Information Held by Administrative Organs and the University of Toyama Policies on Personal Information Protection

(1) Names, addresses, and other personal information that the University of Toyama obtains from applicants will be used for 1) the selection of students (processing of applications and the selection process), 2) announcement of successful applicants, 3) enrollment procedures, 4) investigation and research for the selection process, and 5) other related activities.

(2) Personal information obtained from persons who have completed the admission procedures will be used for preparatory education before admission and for 1) instruction and administration (the school register, student guidance, etc.), 2) student assistance (health management, application for tuition exemptions and scholarships, employment assistance, etc.), and 3) the collection of tuition after admission.

(3) The names and addresses of successful applicants may be used to facilitate contact by organizations related to after-school activities, the alumni association, the support association, and the student cooperative association of the University of Toyama.

Note: Successful applicants who do not wish to be contacted by the abovementioned organizations should notify the Educational Affairs Division of Medicine and Pharmaceutical Sciences Majors (in charge of admission), University of Toyama to that effect.

- (4) The University of Toyama may partially outsource operations to commissioned companies (hereinafter referred to as “Contractors”). We may provide said Contractors with all or part of the personal information obtained through the application process as required for the execution of contracted business.

5. Cautions

- (1) If there is any defect in the application documents, the application may not be accepted.
- (2) Once accepted, the application documents and related materials shall not be returned for any reason.
- (3) If any of the information provided in the submitted documents is found to be false even after acceptance for admission, the admission of a successful applicant may be cancelled.
- (4) Please forward any inquiry about application or other matters to the following address:

Educational Affairs Division of Medicine and Pharmaceutical Sciences Majors
(in charge of admission), University of Toyama, 2630 Sugitani, Toyama
930-0194

Telephone: (076) 434-7658 From abroad: +81-76-434-7658

Overview of the Ph.D. Program in the Department of Pharmaceutical Sciences

1. Purpose

This Ph.D. program in the department of pharmaceutical sciences offers instruction and research pertaining to the latest cross-disciplinary drug discoveries, and instruction pertaining to natural medicine and clinical pharmacy. It produces graduates who will apply the knowledge and technology acquired in the course to play an active role in pharmacy-related fields, including research into new drugs.

2. Standard Term of Study and Required Credits

(1) Term

The term for the Ph.D. Program in the Department of Pharmaceutical Sciences is three years as a standard.

(2) Credit standard

The requirements for the Ph.D. program in the department of pharmaceutical sciences are enrollment in the University of Toyama Graduate School for a period of three or more years, receiving research guidance from academic advisors, obtaining 20 or more credits in total (two or more credits for lectures on the subjects in the major field, four or more credits for practice on pharmaceutical sciences and 14 or more credits for special research on pharmaceutical sciences under the supervision of academic advisors), and successful completion of a screening of a doctoral dissertation and final examination after having obtained the necessary research guidance. However, a doctorate may be conferred on a student who has been enrolled in the Graduate School for a period of two years or longer, and has achieved excellent research results.

In the high-level professional course based on natural medicine, students must acquire internship , practice in developing drug formulation ,practice in drug efficacy and pharmacokinetics , International Pharmaceutical Sciences in addition to the above credits.

3. List of Subjects

See Appendix I.

4. List of Academic Advisors and Their Research Themes

See Appendix II.

5. Customized Schedule

An eligible student may receive a customized schedule following submission of a study plan and consultation with the academic advisor. A customized schedule allows a student to take classes and receive research guidance in the evening from 6:05 to 9:10 pm from Monday through Friday in addition to the time allotted during the day. Depending on the subject, a student may be able to take classes at other times as well, such as on Saturdays or during the summer vacation.

Period I	8:45 am to 10:15 am	Period II	10:30 am to 12:00 pm	Period III	1:00 pm to 2:30 pm
Period IV	2:45 pm to 4:15 pm	Period V	4:30 pm to 6:00 pm		
Period VI	6:05 pm to 7:35 pm	Period VII	7:40 pm to 9:10 pm		

6. Conferral of Degree

The degree offered is a Doctor of Philosophy in Pharmaceutical Sciences.

7. Course for Developing Highly Skilled Professionals

The Graduate School of Medicine and Pharmaceutical Sciences for Education offers the program for developing highly skilled professionals based on natural medicine and pharmaceutical sciences (PDNP). The Graduate School accepts students from Japan, China, Korea, ASEAN, and other countries and cultivates human resources who will contribute to the field of pharmacological therapy through team medicine in medical practice, as well as excellent human resources involved in pharmaceutical research, and in the development and quality control of medicines in pharmaceutical companies. The Graduate School also contributes to the development of the field of Pharmaceutical Sciences based on the historical traditions of the Toyama area, use of the seeds accumulated at the University of Toyama through research and education, and cooperation among universities in Asia through this project. The pharmaceutical sciences course offers a program to develop professional experts in natural medicine through long-term internships at pharmaceutical companies with in-depth knowledge of natural medicine. There, students gain comprehensive experience that includes research, development and quality control of medicines.

In the high-level professional course based on natural medicine, students are not only obtaining 20 or more credits in total, but also acquire four credits for internship and one credit for practice in Pharmaceutical Formulation Development or practice in Pharmacokinetics.

Appendix I

List of Subjects

Subject Name	Year	Credits			Remarks
		Requirement	Elective	Optional	
Molecular Biopharmaceutical Sciences	1・2		2		
Molecular Medicinal Science	1・2		2		
Advanced Lecture in Advanced Oriental and Western Medicine	1・2		2		
Practice in Pharmaceutical Formulation Development	2・3		1		
Practice in Pharmacokinetics	2・3		1		
International Pharmaceutical Sciences	1・2		2		
Internships	2・3		4		
Seminar for Pharmaceutical Sciences	1～3	4			
Special Research for Pharmaceutical Sciences	1～3	14			
Research Ethics and Methods	1～3			1	e-Learning
Japanese Language・Culture for Foreign Student	1・2			4	
Total		18	14	5	

Appendix II

List of Academic Advisors and Their Research Themes

Educational Field	Academic Advisor	Research Themes
Biopharmaceutics	Professor Ken-ichi Hosoya	<ul style="list-style-type: none"> • Blood-retinal barrier transport function analysis and drug delivery to the retina • Blood-retinal barrier cell reconstruction and analysis of interaction between cells • Elucidation of biological function and transport function in in vivo barrier tissue
Applied Pharmacology	Associate Professor Tsugunobu Andoh	<ul style="list-style-type: none"> • Development of animal model of diseases that exhibit the sensory symptoms, such as itch, pain and dysesthesia • Study of the mechanisms of itch, pain and dysesthesia. • Search and development of therapeutic and prophylactic medicines for itch, pain and dysesthesia.
Biorecognition Chemistry	Professor Takenori Tomohiro	<ul style="list-style-type: none"> • Chemical biology for efficient drug discovery: target identification, visualization, utilization, and manipulation • Drug activity-based functional proteomics
Cancer Cell Biology	Professor Hiroaki Sakurai	<ul style="list-style-type: none"> • Elucidation of the molecular mechanisms of tumor progression via inflammatory signaling pathways. • Study on the activation mechanisms of molecular targets in cancer therapy. • Study of the gene expression mechanisms of drug-metabolizing enzymes.
Chemical Biology	Professor Masahiko Inouye	<ul style="list-style-type: none"> • Chemical biology based on synthetic chemistry, particularly three projects in artificial DNA, protein control, and saccharide recognition
Synthetic and Medicinal Chemistry	Professor Yuji Matsuya	<ul style="list-style-type: none"> • Development of new organic reactions for drug discovery • Search for novel seeds of new drugs and structure-activity relationship research • Synthesis and structural optimization of bioactive compounds
Molecular Neurobiology	Associate Professor Akiko Tabuchi	<ul style="list-style-type: none"> • Elucidation of the molecular mechanisms underlying regulation of neuronal function and plasticity by gene expression and cellular communication between synapses and a nucleus • Studies on neurological disorders caused by dysfunction of transcription factors and synaptic molecules. • Basic studies on transcription factors and synaptic molecules toward drug development targeted for neurological disorders.

Gene Regulation	Associate Professor Yutaka Hirose	<ul style="list-style-type: none"> • Study on the molecular mechanism of transcription initiation by RNA polymerase II • Study on the role of mammalian Mediator complex in controlling gene expression • Study on the regulatory mechanism of pre-mRNA processing coordinated with transcription • Study on the pathological mechanism of human diseases associated with misregulation in gene expression program
Molecular Cell Biology	Professor Takanori So	<ul style="list-style-type: none"> • Elucidation of immunoregulatory mechanisms of TNF-related family molecules • Analysis of structure and function of ABC protein subfamily D • Elucidation of molecular pathology of X-linked adrenoleukodystrophy and development of therapeutic agents
Medicinal Bioresources	Professor Fumiya Kurosaki (will be retired in March 2019)	<ul style="list-style-type: none"> • Relationship between structures and catalytic activities of biosynthetic enzymes of natural products accumulated in medicinal plants • Elucidation of signal transduction mechanisms Involved in enhancement of transcriptional activity of secondary metabolism-related genes of plant cells
Synthetic and Biomolecular Organic Chemistry	Professor Takayuki Yakura	<ul style="list-style-type: none"> • Development of environmentally benign organic reactions • Synthesis of biologically active natural products • Pharmaceutical chemical research in bioactive substances
Biointerface Chemistry	Professor Minoru Nakano	<ul style="list-style-type: none"> • Study of membrane lipid dynamics and elucidation of lipid transfer machinery • Elucidation of lipid flip-flop mechanisms • Biophysical research for interaction of amyloid beta with membranes • Structural and functional investigation and pharmaceutical application of lipid nanoparticles
Pharmaceutical Physiology	Professor Hideki Sakai	<p>Physiological, biochemical and pharmacological studies in epithelial cells to clarify</p> <ol style="list-style-type: none"> 1) interactions between drugs and ion-transporting proteins 2) transportsome functions 3) functional relations among ion-transporting proteins
Pharmaceutical Technology	Professor Yoshinori Onuki	<ul style="list-style-type: none"> • Development of optimization techniques for designing pharmaceutical formulations and manufacturing processes • Studies on pharmaceutical characteristics using molecular imaging techniques
Pharmacognosy	Professor Katsuko Komatsu	<ul style="list-style-type: none"> • Pharmacognostical study on medicinal plants and herbal drugs by molecular systematic, chemical and pharmacological approaches • Study on quality standardization of herbal drugs as well as health supplements • Field investigation on herbal drug resources and traditional medicine around the world • Chemometric profiling of multiple components in crude drugs and Kampo formula • Discovery of bioactive natural compounds from traditional medicines

Natural Products Chemistry	Professor Hiroyuki Morita	<ul style="list-style-type: none"> • Studies on biosynthesis of naturally occurring bioactive compounds • Structural basis for secondary metabolite enzymes • Enzyme engineering for novel drug development • Isolation of bioactive compounds from plants, microorganisms, and marine organisms • Investigation of Asia's natural resources not fully utilized
Medicinal Pharmacology	Professor Kinzo Matsumoto (will be retired in March 2019)	<ul style="list-style-type: none"> • Neuropharmacological studies on pathophysiological mechanisms and experimental drug therapy of cognitive and emotional disorders • Molecular pharmacological studies on underlying mechanisms and chemical regulation of neurodegeneration • Psychological and social stress-induced neuropsychiatric disorders and experimental (crude) drug therapy
Pathogenic Biochemistry	Professor Yoshihiro Hayakawa	<ul style="list-style-type: none"> • Study of NK cell biology and its roles in immunity • Role of innate immune responses in cancer progression • Immunological study of inflammatory & allergic diseases • Modulation of immune responses and immunological diseases by Kampo medicines • Study to regulate cancer progression & metastasis
Gastrointestinal Pathophysiology	Professor Makoto Kadowaki (will be retired in March 2020)	<ul style="list-style-type: none"> • Elucidation of the pathogenesis and mechanism underlying the enteric immune diseases • Research on new seeds of the therapeutic medicine against the enteric immune diseases • Elucidation of the cross-talk between the enteric nervous system and the mucosal immune system
Neuromedical Science	Professor Chihiro Tohda	<ul style="list-style-type: none"> • Integrative elucidation of the molecular mechanism of restoring the neuronal network in the central nervous system. • Traditional medicine research seeking fundamental therapeutic drugs for Alzheimer's disease, spinal cord injury or depression. • The molecular mechanism of recovery of neurodegenerative diseases based on the glial cell-neuron interaction. • Drug development for skeletal muscle atrophy. • Proof of concept in humans aiming to develop new botanical drugs and new Kampo formulas.
Nutritional Biochemistry	Associate Professor Shiro Watanabe	<ul style="list-style-type: none"> • Mechanistic elucidation for lipid metabolic abnormality in cancer cachexia and its modulation by lipid nutritional interventions • Nutritional assessment of the differential actions of α-linolenic acid, eicosapentaenoic acid and docosahexaenoic acid in the modulation of immuno-inflammatory responses • Mechanistic elucidation for the novel actions of Kampo medicines from toxicological aspects

<p>Natural Drug Discovery</p>	<p>Associate Professor Suresh Awale</p>	<ul style="list-style-type: none"> • Discovery of natural anticancer agents from medicinal plant resources by employing a novel antiausterity screening strategy. • Chemical investigation of medicinal plants and search for novel bioactive secondary metabolites. • Investigation of the structure-activity relationship of the active natural compounds and their mechanism of action against cancer cell survival pathways. • Discovery of metabolomic biomarkers associated with cancer cells by utilizing FT-NMR and MS strategy.
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