

Doctoral Program for World-Leading Innovative & Smart

Education (WISE): KANAZAWA UNIVERSITY

Nano-Precision Medicine, Science, and Technology

April, 2022

Application Guidebook



Organization of Global Human
Resource Development

WISE Program Steering Committee

Schedule

Process	Dates
Briefing (online)	Start at 4:30 pm on Tue, October 12, 2021
Application	From 9:00 am on Mon, November 22, 2021, to 4:00 pm on Fri, December 10, 2021
Exam Admission Ticket available for print out *	From 9:00 am on Fri, December 24, 2021
Screening step 1 (document screening)	Informed the results no later than Fri, December 24, 2021
Screening step 2 (interview)	Sat, January 8, 2022
Announcement of results	Around 3:00 pm on Thu, January 20, 2022
Pre-program lectures	Around February to March, 2022
Admission procedure	Set by graduate school
Admission	Fri, April 1, 2022

* Please print out the exam admission ticket by the day of the entrance exam on the web application system.

Pre-program lectures for applicants who pass the entrance exam will be held on around February to March, 2022. Attendance is mandatory. Further details will be sent to all successful examinees.

Please read the following before proceeding with your application

You should only apply for the WISE program if you are willing to pursue a doctoral degree. In this program, you may choose between a five-year integrated program (two years for the master's and three for the Ph.D.) or a four-year medical pharmacy Ph.D. program.

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1. Overview

“Precision Medicine” was proposed by America in 2015, and is attracting worldwide attention. In 2015. Since then, there has been a growing interest in precision medicine, particularly in a model that seeks to customize medical treatment based on the characteristics of each patient using cutting-edge molecular diagnostics. However, molecular diagnostic testing alone is often insufficient and cures for numerous diseases remain elusive.

In line with this, Kanazawa University has led efforts to find the universal etiologies of such diseases. Through our nanoprobe technology, we have established a hub of interdisciplinary education and research for developing innovative prevention, diagnosis, and treatment using nanotech. Many students and researchers in this field become innovators, leading the way toward the development and application of Nano-Precision Medicine, Science, and Technology—a new field that is highly applicable to personalized healthcare.

The Nano-Precision Medicine, Science, and Technology doctoral program (the WISE program) is designed to produce nano-precision medical experts with knowledge of engineering and nano-precision engineering experts with proper medical knowledge. With the ability to understand and manipulate matter at a nanoscopic scale, these professionals will lead innovation in the prevention, diagnosis, and treatment of 5 global health challenges: cancer, lifestyle diseases, neurological disorders, and health problems caused by particulate matter and by nanomaterials

2. Admission Policy

The purpose of the WISE program is to nurture knowledge professionals with advanced expertise in nanometrics and equip them with the analytical discernment to understand vital phenomena at a nanoscale; the creativity to lead innovation in precision medicine and engineering; and the practicality to translate research findings into real-world solutions.

The program aims to nurture 2 kinds of professionals:

- Nano-precision medical experts who have high computer literacy
- Nano-precision engineering experts who have a thorough grasp of medical knowledge

...with 3 core competencies:

- The ability to work in multidisciplinary teams, harnessing the all the knowledge of medicine, science, and engineering at hand
- Deep understanding of how frontline healthcare professionals prevent, diagnose, and treat

conditions

- The ability to act as a knowledge professional, bringing together people of diverse backgrounds.

Requirements

The program is open to students enrolled in any of the 4 graduate schools: Natural Science and Technology, Medical Sciences, Advanced Preventive Medical Sciences, and Frontier Science Initiative. We will select students who embody the following:

- A passion for research of about nanoscience and nanotechnology, combined with basic academic proficiency in science, engineering, medicine, medical science, pharmaceuticals, drug discovery, health sciences, and related fields.
- An open mind, creative thinking skills, social skills, integrity, and the drive to find solutions for health problems.
- A keen interest in new research findings or technological development; and a desire to lead innovation in society and create new business opportunities.
- Human resources that possess tolerant attitude and outstanding communication skills with respect of other cultures and other people, un beholden by existing frameworks of country, region, society, institution, etc., and individual specialism; and are capable of engaging in interdisciplinary exchanges with fields differing from one's own specialism with multi-angled logical thinking skills.

Requirements for a doctoral degree

To complete the program, you must satisfy the course completion requirements set by your graduate school and complete the minimum amount of 12 credits required under this program. Students who satisfy these requirements will be awarded a degree which includes a certification of completion this program.

Each degree includes:

- The name of the holder
- Notation certifying that the holder has completed the Nano-Precision Medicine, Science, and Technology WISE program

•Compulsory subjects for this program

Course	Subjects taught	Number of credits
Basic Program Course	Introduction to Nano Precision Medicine, Science and Engineering	1 credit
	Introduction to Nano Science	2 credits
	Innovation Management	1 credit
	Introduction to Mathematical and Data Science	1 credit
	Laboratory Rotation	1 credit
Expert Course	Nano Science Fusion Practical exercises	2 credits
	Business Internship, Research Internship(Select one)	2 credits
	Each specialized subject	2 credits
—	Total compulsory subjects	12 credits

The curriculum of this program fosters the qualities of big-picture thinking and developing creativity regarding nanoscience in the students. It consists of a Basic Program Course and Expert Courses to develop an international outlook and high levels of expertise in the students.

Nano-Qualifying Examination, which consists of a written test and an oral interview, is conducted to evaluate whether the students have acquired the basic knowledge about nano medicine and nano science/engineering. Only the students who pass the examination may proceed to the expert courses. It also has the function of examining the doctoral dissertation basic research skills of students in the former doctoral course, as stipulated by the standards of the graduate schools, which means that it also serves as a master's degree examination.

3. Selection Criteria

To be selected for admission, applicants must first pass the entrance exam set by a relevant graduate school and then undergo a two-step screening process.

Each applicant's statement of purpose, research plan, and entrance exam results are reviewed during the first step of the screening process to ensure academic competence and proper motivations for joining the program. Those who pass this step will advance to the second step.

Applicants will be interviewed during the second step to determine whether the applicant has the required attributes outlined in the previous section. The results of both steps will be considered in the deliberation process.

4. Number of Available Slots

A total of 12 students will be selected for the April 2022 intake.

(Intended: five-year integrated program (two years for the master's and three years for the Ph.D.) and four-year Ph.D. program.)

5. Eligibility Criteria

To be eligible to participate in this program, applicants must have either passed the entrance exam for, or applied to enroll in, any of the following postgraduate programs:

Graduate school and program	Major
Graduate School of Natural Science and Technology (Master's program)	All majors
Graduate School of Medical Sciences (Doctor of Medicine program Doctor of Pharmacy program) (Master's program)	
Graduate School of Advanced Preventive Medical Sciences (Doctor of Medicine program)	
Graduate School of Frontier Science Initiative (Master's program)	

Applicants must also satisfy both of the following requirements:

- Applicants must be willing to pursue a doctoral degree on either a five-year integrated program (two years for the master's and three for the Ph.D.) or a four-year Ph.D. program.
- Applicants must have permission to participate in the program from his or her supervisor at the relevant graduate school.
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6. Application Procedure

How to submit your application

After registering the necessary information online (Web application system) for application period, and uploading the documentation, submit "Application Checking Form (for submission)" electronically to the address listed on "Contact Information" (page 7). When doing so, please write "Application for WISE Program on April 2022: (name of the applicant)" in the subject line of the email.

Web application system
 university homepage 金沢大学->教育->入試情報-> Web 出願-> Web 出願システム
<http://www.guide.52school.com/guidance/net-kanazawa-u/eng/>

Application documents

The application documents are listed below and can be downloaded from [this page](#).

WISE Program website

university homepage 金沢大学-> 教育-> 特色ある取り組み-> 卓越大学院プログラム

URL : <https://nano-wise.w3.kanazawa-u.ac.jp/>

Please fill out the application electronically using a desktop or device. The “signature” field requires your handwritten signature or an impression of your registered seal.

1) What to upload to the web application system

Application document	Notes
Portrait photograph	Use a jpg or png data, size 100KB～5MB, of a clear photo of the applicant in color, upper body, hatless, facing front, solid color background, and taken in the last 3 months.
Form A: Agreement form	Please obtain the approval of the primary supervisor of the graduate school in which you plan to enroll for this program. You need to have a signature of the primary supervisor. A reply email to the effect that the primary supervisor agrees is acceptable, instead of the signature.
Form B: Letter of application	Please fill out the application electronically using a desktop or device. You may add figures or images and use Japanese or English. There is no word limit, but please keep the text within two pages.
Academic transcript	Please submit a transcript of your undergraduate and master’s degree. However, graduates or those who are scheduled to graduate from Kanazawa University do not need to submit this.
A copy of your exam admission ticket issued by the relevant graduate school.	The copy should clearly indicate your name and exam number (You do not need to submit this item if you are planning on sitting the exam).

Note 1: Please fill out notable matters (Awards, Publications etc.) in the form on Web application system. If you cannot fill in the form, please write it on a separate sheet of paper and upload it.

Note 2: Please note that the submitted documents will not be returned to you.

2) What to submit to the address listed on " Contact Information" (page 7)

Application document	Notes
Application Checking Form (for submission)	Please submit the application checking form by downloading it from the application confirmation page. Note 1: The application checking form cannot be downloaded until the necessary information has been registered, and the documents have been uploaded. Note 2: Please note that this is different from the application checking form (for confirmation).

Exam fee

There are no exam fees.

Application period

Applications will be accepted from 9:00 am on Mon, November 22 2021, until 4:00 pm on Fri, December 10 2021.

Contact Information

WISE Program Office, Kanazawa University Kakuma-machi, Kanazawa, Ishikawa Prefecture
920-1192

Email: wise-ku@adm.kanazawa-u.ac.jp

7. Screening Process

Step 1 (document screening)

Your application and entrance exam results will be assessed during this step. We will inform you about the results through the email indicated in your application no later than Fri, December 24, 2021.

Step 2 (interview)

Those who pass the first step will be interviewed on Sat, January 8, 2022. Details will be provided via email. You will be given 5 minutes to present your research plan using slides or other presentation tools. After your presentation, you will be interviewed for 10 minutes. You will be asked about your motivations for participating in the program, your career plans, and other matters. Please be sure to bring a printed admission ticket on the day of the interview. You can print out it on

the web application system from 9:00 am on Fri, December 24, 2021.

* In order to prevent the spread of the COVID-19, interviews may be conducted using a web communication tool. Details will be provided in a notice to applicants.

8. Announcement of Successful Applicants

The names of successful applicants will be published on the university website at around 3:00 pm on Thu, January 20, 2022. Also, applicants can check whether they have been accepted on the online pass/fail inquiry system.

WISE Program website

university homepage 金沢大学-> 教育-> 特色ある取り組み-> 卓越大学院プログラム
<https://nano-wise.w3.kanazawa-u.ac.jp/>

Online pass/fail inquiry system

university homepage 金沢大学-> 教育-> 入試情報-> 合格者発表-> オンライン合否照会
<https://www.kanazawa-u.ac.jp/education/admission/goukakusyahappyou>

9. Admission Procedure

This WISE program has no separate admission procedure. You will be deemed to have enrolled in the program once you have completed the application procedure for the relevant graduate school. If you wish to withdraw from the program, please immediately contact the WISE Program Office address indicated in number 12.

10. Financial Assistance

In keeping with the spirit of the WISE program, we offer financial assistance to participating students (subject to separate terms and conditions) to help them focus on their research.

- **Admission and tuition fees waiver**

Successful applicants will have their admission and tuition fees completely waived. This waiver applies only for the duration of the term of study specified in the Rules of the Graduate Schools.

- **Subsidy for tuition and research expenses (subject to terms and conditions)**

Exemplary participants may be eligible to receive a subsidy for tuition and research expenses of up to 120,000 yen per month. Payment of support expenses, including the amount of the grant, is determined each year through a review based on the WISE Program Rules for the Tuition and Research Subsidy. Recipients of this subsidy must refrain from part-time work, as the subsidy's primary purpose is to help participants focus on their studies and research. This

subsidy is considered as “miscellaneous income” under the Japanese Income Tax Law. Therefore, it is subject to taxation. You have to file a tax return.

– **Research assistant salary**

Participants have the opportunity to participate in staff member-led WISE projects as a research assistant (RA) and be compensated accordingly.

– **Travel subsidy**

Participants are eligible to receive a subsidy for some of the costs they incur from presenting at academic gatherings related to internships or overseas study.

For the support content, the amount to be paid will be determined on a yearly basis within the budget.

Please note these financial assistance are special cases for students who have completed the program, and may be suspended or required to be returned in the event that the student withdraws or suspends the program or in other cases.

11. Data Privacy

Personal information submitted in the application (e.g., your name and address) will only be used for administrative purposes and the application process (i.e., document screening, interview, announcement of successful applicants).

Personal information related to the screening process (e.g., exam results) will be used to statistically process screening results and evaluate the method for screening participants. The results of the relevant graduate school’s entrance exam will be referred to when determining whether to admit you into the program or not.

Once you complete the program, your name and the institutions affiliated to you may be publicized in printed reports and other publicly accessible printed materials. Photographic records of lectures, events, and other program activities may be published online or in printed publications.

12. Other Matters

Inquiries

Please direct all inquiries to the WISE Program Office.

WISE Program Office, Kanazawa University, Kakuma-machi, Kanazawa, Ishikawa Prefecture
920-1192

Email: wise-ku@adm.kanazawa-u.ac.jp

URL: <https://nano-wise.w3.kanazawa-u.ac.jp>

Additional notes

- The documents you submit will not be returned to you. Incomplete applications will not be accepted.
- We reserve the right to refuse you admission or expel you from the program if we determine that you made false statements in your application. In such a case, you will be required to reimburse the entire cost of any financial assistance you were provided.
- You will be contacted through the telephone number or email address indicated in your application. Please ensure that the email address you provide is able to receive mail from the university (from kanazawa-u.ac.jp). You must also be able to access any files attached to the emails sent to you. Do not use a mobile email address.

13. Program Staff

The program has a total of 80 staff members as of September, 2021.

<https://nano-wise.w3.kanazawa-u.ac.jp>

Title		Name	Expertise
Program Representative	Trustee/Vice President	OHTAKE, Shigeki	Hematology
Program Coordinator	Professor	HANAYAMA, Rikinari	Immunology
Program Manager	Professor	ICHIMURA, Hiroshi	Virology and international healthcare
Graduate school deans			
Name	Title	Expertise	
MATSUMOTO, Koichi	Dean of the Graduate School of Natural Science and Technology	low temperature physics	
HORI, Osamu	Dean of the Graduate School of Medical Sciences	Neuroanatomy and neuroscience	
TAJIMA, Atsushi	Dean of the Graduate School of Advanced Preventive Medical Sciences	Genome medicine	
IYAMA, Koichi	Dean of the Graduate School of Frontier Science Initiative	Optoelectronics and instrumentation	
Program advisers			
Name	Title	Expertise	
MORIMOTO, Akiharu	Professor	Electrophysics	
NAKAMURA, Hiroyuki	Professor	Public health	
WADA, Takashi	Professor	Nephrology	
MATSUMOTO, Kunio	Professor	Biochemistry	
YONEDA, Takashi	Professor	Health promotion, medical innovation	
KANAMA, Daisuke	Professor	Innovation theory, marketing theory	
YONEYAMA, Takeshi	Professor	Metal forming, sports engineering, medical instrument	

YOSHIDA, Takeshi		Assistant Professor		immunology	
Nanomedicine course					
Name	Title	Expertise	Name	Title	Expertise
* TAJIMA, Atsushi	Professor	Genome medicine	OSHIMA, Masanobu	Professor	Oncology
INOUE, Hiroshi	Professor	Metabolism and nutrition	TAKAMURA, Toshinari	Professor	Endocrinology and metabolism
KURACHI, Makoto	Professor	Molecular biology and immunology	NAKAJIMA, Miki	Professor	Pharmacometabolism
HIRAO, Atsushi	Professor	Stem cell biology	OKAMOTO, Shigefumi	Professor	Pathogenic microbiology
HARADA, Kenichi	Professor	Pathology	YANO, Seiji	Professor	Medical oncology
FUJINAGA, Yukako	Professor	Bacteriology	TOKORO, Masaharu	Associate Professor	Infectious disease
HARA, Akinori	Associate Professor	Public health	NAMBO, Hidetaka	Associate Professor	AI
HIRAYASU, Kohyuki	Associate Professor	Immunology	**ISHIBASHI, Taro	–	–
**NISHIBE, Takahiro	–	–	**NAKA, Toshiaki	–	–
Nanoneurology course					
Name	Title	Expertise	Name	Title	Expertise
* KIKUCHI, Mitsuru	Professor	Pediatric psychiatry	OZAKI, Noriyuki	Professor	Pain science
HIROSHI, Kawasaki	Professor	Neuropsychiatry	NISHIYAMA, Masaaki	Professor	Molecular biology
MIEDA, Michihiro	Professor	Neuroscience and physiology	YAMAMOTO, Yasuhiko	Professor	Biochemistry and disease biology
KANEDA, Katsuyuki	Professor	Neuropsychopharmacology	NAKADA, Mitsutoshi	Professor	Neuro-oncology
MATSUI, Mie	Professor	Neuropsychiatry	MIYACHI, Toshiaki	Professor	Magnetic resonance in medicine
YOKOYAMA, Shigeru	Professor	Molecular neurobiology	SATO, Makoto	Professor	Neuroembryology
WONG, Richard	Professor	Molecular cell biology	HASHIMOTO, Takanori	Associate Professor	Psychiatry
HAMAGUCHI, Tsuyoshi	Associate Professor	Neuropsychiatry	MIKHAILOV, Alexander	Principal Investigator (overseas)	Theoretical physics
**MORISE, Hirofumi	–	–			
Nanoenvironment course					
Name	Title	Expertise	Name	Title	Expertise
*HASEGAWA, Hiroshi	Professor	Analytical and environmental chemistry	TAIMA, Tetsuya	Professor	Organic solar cells
TOKUDA, Norio	Professor	Circuit engineering	SETO, Takafumi	Professor	Chemical engineering
TAKAHASHI, Kenji	Professor	Chemical reaction engineering	MAEDA, Katsuhiro	Professor	Polymerization
AKINE, Shigehisa	Professor	Supramolecular chemistry	ZUKA, Masahiko	Professor	forensic medicine

ASAKAWA, Hitoshi	Associate Professor	Nanometrology	FURUYAMA, Taniyuki	Associate Professor	Organic synthesis
MATSUKI, Atsushi	Associate Professor	Atmospheric science	HIEJIMA, Yusuke	Associate Professor	Polymer physics
MACLACHLAN, Mark	Principal Investigator (overseas)	Supramolecular chemistry	**SHIMAMOTO, Shu	–	–
**HARA, Tsutomu	–	–			
Nanodiagnostics course					
Name	Title	Expertise	Name	Title	Expertise
*KODERA, Noriyuki	Professor	Biophysics	FUKUMA, Takeshi	Professor	Nanometrology
SAKATA, Yoko	Associate Professor	Supramolecular chemistry	TAKAHASHI, Yasufumi	Associate Professor	Electrochemical instrumentation
SHIBATA, Mikihiro	Professor	Biophysics	NISHIMURA, Tatsuya	Associate Professor	Radical polymerization
WATANABE, Shinji	Associate Professor		KONNO, Hiroki	Associate Professor	Biochemistry, Single molecule measurements
Nakayama, Takahiro	Associate Professor	Single molecule observation Atomic force microscopy	MIYATA, Kazuki	Assistant Professor	Nanotechnology Atomic force microscopy Solid/liquid interface
MIYAZAWA, Keisuke	Assistant Professor	Scanning Probe Microscopy	SUMINO, Ayumi	Assistant Professor	Biophysics Ion channel Atomic force microscope
FOSTER, Adam	Principal Investigator (overseas)	Solid-state physics	KORCHEV, Yuri	Principal Investigator (overseas)	Biophysics
**TSURUMUNE, Atsushi	–	–	**KAKIDACHI, Hiroshi	–	–

* = Course manager ** = Representative of partnered institution