

**Admission Guidelines for the Academic Year 2023 for the
World-leading INnovative Graduate Study Program (WINGS),
Frontiers of Mathematical Sciences and Physics (WINGS-FMSP)
2022/2023 winter recruitment**

The University of Tokyo conducts the World-leading *INnovative Graduate Study Program* (WINGS) that is Doctoral Programs cooperated by several graduate schools and institutes in order to foster doctoral personnel who contribute to human society with high research power and expertise. The Graduate School of Mathematical Sciences conducts the *Frontiers of Mathematical Sciences and Physics* (WINGS-FMSP) and recruits course students.

Prospective profile of FMSP course graduates

The key to innovation in sciences and society is the construction and renewal of the underlying mathematical theory. We aim to foster the next generation of mathematical science leaders who can create research areas that are centered on mathematics and spread in various sciences and deepen and create novel mathematical theories.

The WINGS-FMSP website <https://www.ms.u-tokyo.ac.jp/wings-fmsp/>

1. Application requirements

To apply for this program under the following guidelines, you must fulfill all of the requirements listed below.

- You must be a prospective student at the University of Tokyo planning to enroll in the Master Course of Graduate School of Mathematical Sciences in April, 2023 (*1).
- You aim to acquire a PhD degree in fields related to mathematical sciences, in a broad sense of the term.
- You are interested in the social/industrial applications of science, and eager to actively learn about them.
- You fully understand the purpose of the WINGS-FMSP course, as well as its rules, such as course requirements.
- You intend to enroll in the Doctoral program at one of the eight graduate schools participating in the WINGS-FMSP program (*2).

- You agree to apply for DC1/DC2 in the JSPS Research Fellowship for Young Scientists, and should you be accepted, you also agree to stay in the WINGS-FMSP course. (This requirement does not apply for government-sponsored foreign students.)
- You understand and agree to the fact that your PhD diploma will bear a note saying that you have completed the WINGS-FMSP course.

(*1) In principle, you may not simultaneously apply for WINGS-FMSP and another WINGS program. However, students from the Graduate School of Mathematical Sciences may apply for both WINGS-FMSP and the Forefront Physics and Mathematics Program to Drive Transformation (FoPM).

(*2) You may not enroll in the WINGS-FMSP program if you are planning to find business employment when you finish your Master's program.

2. Selection method

Selection will be based on the prospective students' application documents (Applicant Information, Research Proposal, Essay, and Supervisor's Letter of Opinion), their scores in the graduate school entrance examination and their scores in the graduate course.

3. Enrollment period

New WINGS-FMSP course students will be enrolled in the program from October 1, 2023 to March 31, 2025. In February 2025, a Qualifying Examination will take place to select those to be permitted to stay on the program through their Doctoral years. Students who are selected will be enrolled in the WINGS-FMSP course up to March 31, 2028.

4. Financial support

Master's course: From October 1, 2023, WINGS-FMSP course students may be appointed as TAKUETSU (Excellence) Research Assistants (TRAs) and be paid 120,000/150,000 yen per month as a *salary* in their master's program. The amount of a TRA salary for the first year is 120,000 yen per month and we decide by review in March 2024 whether the amount is increased to 150,000 yen per month from April 2024.

Students who receive Japanese Government (Ministry of Education, Culture, Sports, Science and Technology, MEXT) Scholarships or any scholarships from the University of Tokyo cannot be appointed as TRAs, but may apply for WINGS-FMSP. Students

who do not wish to be appointed as TRAs, for example, because they are receiving other scholarships or have concerns about dependent exemption, may also apply for the program.

Doctor's course: WINGS-FMSP course students may receive a monthly grant of 200,000 yen as a *scholarship* in their doctor's program.

When a WINGS-FMSP student is accepted as a JSPS Research Fellow for Young Scientists, you are required to stay in WINGS-FMSP, while not receiving this scholarship.

(*1) The appointment of TRAs will start on October 1, 2023. Therefore, no financial support from this WINGS program will be provided from April 1 to September 30.

(*2) Income tax will be deducted from your TRA salary every month. You must therefore make a year-end adjustment or file a final tax return.

5. Seats available

Graduate Schools	Number of new students to be admitted
Mathematical Sciences	5 (approximately)

(*1) Students who enroll in the Master's course at the Graduate Schools of Mathematical Sciences, Science, Economics, Frontier Sciences, Engineering, Information Science and Technology, Medicine, and Arts and Sciences in April 2023 can apply for *2023 summer recruitment*. Applications from them will be accepted around September 2023 and 7 students are to be admitted.

(*2) Note that if you apply this time, you cannot apply for *2023 summer recruitment* again.

6. Selection announcement and enrollment procedures

- The results of the admission selection will be posted in the WINGS-FMSP website Monday, March 6, 2023 around 13:00. The applicants will also receive their results by email.
- 誓約書 (written oath) will be emailed to successful applicants with the selection results. Those who have been accepted must submit 誓約書 by **13:00 on Monday**,

March 13, 2023. Those who fail to hand in 誓約書 by the deadline will be treated as having declined to enroll in the WINGS-FMSP program. Other enrollment documents will be provided around July 2023.

7. Application procedures

(1) Application documents

- a. The *WINGS-FMSP Course Application* form: Fill out the form by the applicant (yourself) and save it as a *pdf* file.
- b. The *Letter of Opinion on the Applicant* form: Ask your expected supervisor (or your supervisor at your current university) to fill out the form and save it as a *pdf* file.

Those forms are available on the WINGS-FMSP webpage.

(2) How to apply

- a. The applicant must send the *WINGS-FMSP Course Application* form by email to the following address. The name of the applicant should be clearly written on the email subject.
- b. The applicant's (expected) supervisor must directly send the *Letter of Opinion on the Applicant* form by email to the following address. The name of the applicant should be clearly written on the email subject.

The application will not be considered unless all of the necessary documents (including the supervisor's letter of opinion) are submitted by the deadline.

(3) Application periods

From Thursday, December 15 until Tuesday, December 27, 2022, and
from Wednesday, January 4 until Wednesday, January 11, 2023.

(4) Email address

fmsp-group@g.ecc.u-tokyo.ac.jp

8. Notes

- Only applications for which all of the necessary documentations are submitted by the deadline will be considered.
- Under no circumstances may an applicant change the contents of their application, once it has been submitted.
- There may be changes made to this guideline or the application procedure due to unforeseen reasons. In such cases, an announcement will be made for potential applicants.

- The personal information made known to the WINGS-FMSP program through the application process will be used for the following purposes: (i) selection of WINGS-FMSP course students (application processing and selection), (ii) announcement of selected applicants, and (iii) enrollment procedures. For the selected applicants only, the information will further be used for administrative duties relating to: (i) academic affairs (e.g. registration, enrollment), and (ii) student support (e.g. employment assistance, tuition waiver applications).
- A student who has made a false statement in their application, even after being selected to join the program, may have their status as a WINGS-FMSP student taken away from them retroactively.

9. Contact information

The WINGS-FMSP Desk, the Graduate School Office of the Graduate School of Mathematical Sciences, the University of Tokyo

E-mail: fmsp-group@g.ecc.u-tokyo.ac.jp

[Last updated: November 2022]

Appendix: Overview of WINGS-FMSP Activities

The WINGS-FMSP program aims to foster the next generation of mathematical science leaders who can create research areas that are centered on mathematics and spread in various sciences and deepen and create novel mathematical theories. Students who are considering applying for this program should consult with their (expected) supervisor and understand the following activities carefully before the application.

Credits

Students must earn at least 6 credits from the 82 courses offered as lectures in this WINGS program (see the WINGS web page for a list of lectures). In particular, "Frontiers of Mathematical Sciences and Society III(社会数理先端科学Ⅲ)" in the Doctoral course is required. In addition, "Frontiers of Mathematical Sciences and Society" is offered as "Practical Research in Mathematical Sciences and Society (社会数理实践研究)" as described below.

International Research Experience or internship

In the Doctoral program, students are required to do one of the following:

- (1) Long-term dispatch to an overseas research institution
- (2) Internship at a company or research institution
- (3) Internship in a laboratory of another graduate school within the university (within a participating eight graduate schools)

Practical Research in Mathematical Sciences and Society (社会数理实践研究)

- This course is designed to conduct research that goes beyond conventional mathematical applications through the application of advanced mathematical knowledge and the creation of new mathematics in response to issues presented by industry and other sectors.
- This course is required to be taken once during the Doctoral program. The credits for the required course "Frontiers of Mathematical Sciences and Society III(社会数理先端科学Ⅲ)" will be granted through participation in this course. It is intended to be taken in the first year of the Doctoral program.
- The guidance is given in July each year, and several assignments are explained to each participating organization (hereinafter referred to as "group"), such as private companies and independent administrative agencies.

- Each student chooses an assignment and belongs to a group. They conduct their research in collaboration with assistant professors, project assistant professors, and support staff, while receiving advice from the persons in charge at the participating institutions. There will be a monthly research meeting and progress report. We expect students to devote no more than 10% of their total research activities to this course.
- While this is a collaborative research project, each student is expected to serve as a leader for one issue and to promote the research.
- An interim presentation will be made in May of the following year, and the results will be presented in October. In addition, the results will be compiled into a letter-style paper (2 or 4 pages in English or Japanese) and submitted to the Practical Research Letters in Mathematical Sciences, an electronic journal (a peer-reviewed journal) edited by the Graduate School of Mathematical Sciences.

Qualifying Exam (QE)

A Qualifying Examination (QE) will be conducted intended for current WINGS-FMSP M2 students to select those permitted to remain in the program as Doctoral students. For this purpose, the evaluation of the master's thesis, the results of the doctoral entrance examination, and the results of the poster presentation will be taken into consideration. For details of the poster presentation, please refer to the WINGS web page.

Secondary Supervisor

In addition to the supervisor, each WINGS student is assigned a secondary supervisor. Students are required to report their research to their secondary supervisor at least once a year, and receive advice on participation in research meetings organized by WINGS-FMSP, acquisition of credits, and dispatch abroad, etc. The course student should take the initiative in contacting and arranging interviews. Only the faculty member in charge of this WINGS program may serve as a secondary supervisor.