

Application Guidelines (AY2019) for the
Program of Excellence in Photon Science (XPS),
a World-leading Innovative Graduate Study (WINGS) Program
[For Students who Enrolled in the Master's Course in April, 2019]

Educational and research goals of XPS

XPS is an international combined Master's/Doctoral program that connects the wide range of research fields related to photon science and places the main educational focus on the fundamental, innovative, and interdisciplinary nature of this field. The objective of the program is to train excellent students who already have a strong basis in their specialized fields to play active roles internationally as Doctoral graduates in industry and academia. Through the program, the students will develop the following qualities in addition to their knowledge of photon science:

- (1) Excellent research ability in a specialized field related to photon science
- (2) Ability to survey issues from a broad perspective and discover ways to solve them
- (3) Ability to solve complex problems in human society by going back to the essence of the issue
- (4) A global mindset and the communication skills needed to play an active role in the international community.

In addition, to encourage the development of the above qualities, XPS aims to accept students from different backgrounds, including international students and students with full-time work experience.

1. Application requirements

To apply for this program, **you must be a student at the University of Tokyo and have enrolled in the Master's course of any department in the Graduate School of Science or the Department of Applied Physics, Graduate School of Engineering, in April, 2019.** You must also fulfill all of the requirements below (*1):

- You aim to acquire a PhD degree in photon science, in the broad sense of the term
- You are interested in the social/industrial applications of science, and are eager to actively learn about them
- You fully understand the purpose of XPS, as well as the course requirements and other rules, and will cooperate with activities related to XPS
- You intend to enroll in the Doctoral program at one of the above-listed departments (*2)
- You agree to apply for the JSPS Research Fellowship for Young Scientists, and should you be accepted, you also agree to stay in XPS (This requirement does not apply for students awarded Japanese Government (Monbukagakusho) Scholarships)
- You are eager to gain experience abroad and to apply for the [JSPS Overseas Challenge Program for Young Researchers](#) or other relevant programs
- You understand and agree to the fact that your PhD diploma will bear a note saying that you have completed XPS

(*1) Except for the International Graduate Program for Excellence in Earth-Space Science (IGPEES), you may not simultaneously apply for XPS and another WINGS program or Program for Leading Graduate Schools.

(*2) You must not apply for XPS if you are planning to find business employment when you finish your Master's degree.

2. Selection method

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

3. Number of students to be admitted

Graduate School	Department	Number of students to be admitted
Graduate School of Science	Dept. of Physics	40
Graduate School of Science	Dept. of Astronomy	
Graduate School of Science	Dept. of Earth and Planetary Science	
Graduate School of Science	Dept. of Chemistry	
Graduate School of Science	Dept. of Biological Sciences	
Graduate School of Engineering	Dept. of Applied Physics	

4. Selection announcement and enrollment procedures

- (1) The Applicant ID numbers of successful applicants will be posted in the front hallway of the School of Science Bldg. 1 (Area W), on Friday, **August 30, 2019** at around 1 pm. You will receive an Applicant ID when you submit your application. All applicants will also receive their results by email (sent to the email address on their application form).
- (2) Enrollment documents will be emailed to successful applicants with the selection results. Those who have been accepted must finish the necessary procedures (submitting the enrollment documents) by Thursday, **September 26, 2019**. Those who fail to submit the necessary documents by the deadline will be considered to have declined to enroll in XPS.

5. Application procedures

- (1) Application documents
 - a. Application Form
Fill out the form directly on the website indicated in (2).
 - b. Research Proposal
Fill out the form provided by the Graduate School of Science on the website indicated in (3), convert the file to a PDF, and upload the PDF file to the website in (2) as designated.
 - c. Supervisor's Letter of Opinion
Enter your supervisor's name, affiliation, title, and email address on the website indicated in (2). As soon as you submit your application, an automated email asking them to fill out an online form will be sent to your supervisor at the email address that you entered. Your supervisor will then have to fill out the form directly on the designated website (*1 and *2).
- (*1) Note that it is not until you submit your application that the email asking your supervisor to fill out the form is sent to them.
- (*2) Confirm that your supervisor has submitted the form during the application period. Your application will not be considered unless all of the necessary documents (including the supervisor's letter of opinion) are submitted by the deadline. An automated email will be sent to you once the supervisor submits the form online.

(2) Online application form:

<https://apps.adm.s.u-tokyo.ac.jp/WINGS/>

(3) Download application documents from:

<https://www.s.u-tokyo.ac.jp/ja/info/6406/>

(4) Application period

From Monday, June 3 until 3pm on Wednesday, June 19, 2019 (JST).

*Late submissions will not be accepted (*1).

(*1) Complete the application well in advance as the server may become busy just before the deadline.

6. Enrollment period

New XPS students will be enrolled in the program **from October 2019 to March 2021.**

In January or February 2021, a Qualifying Examination (QE) will be held to select those permitted to stay in the program throughout their Doctoral studies. The QE will include the submission of a research proposal for your Doctoral research and the oral defense of the proposal. Students who pass the QE will be enrolled in XPS up to **March 2024.**

Those who are selected to stay in the course will take their Final Examination (FE) in the summer of 2023, and those who pass the FE will qualify to complete the course. The FE will include the submission of a research report and the oral defense of the report. The course will be completed if and when the students receive their PhD degrees. For those who submit their dissertations early, XPS will be completed at the time of the conferral of their degrees, provided that they have qualified to complete the course by that time.

7. Financial support

(1) Master's students

If desired, students may be appointed as *TAKUETSU* (Excellence) Research Assistants (TRAs) and be paid to engage in research related to photon science. The appointment will begin from October 1, 2019, and 170,000 yen will be paid per month (*1, *2, and *3). Those who wish to be appointed as TRAs must fill out the designated column on the online application form indicated in 5. (2) to describe your research assignment as a TRA during the first academic year of enrollment (AY2019).

Students awarded Japanese Government (Monbukagakusho) Scholarships or any scholarships from the University of Tokyo cannot be appointed as TRAs, but may apply for XPS. 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.

(2) Doctoral students

Students selected to stay in the course based on the results of the QE may also be appointed as TRAs. In this case, they will receive 180,000 yen per month to carry out research related to photon science (*1, *2, and *3). Students who are accepted as JSPS Research Fellows or who receive Japanese Government (Monbukagakusho) Scholarships or any scholarships from the University of Tokyo cannot be appointed as TRAs.

(*1) TRAs are not allowed to work as Research Assistants, but are encouraged to work as Teaching Assistants on campus.

- (*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.
- (*3) If your total income in one calendar year (January-December) exceeds a certain amount, you will be excluded from the category of dependent and/or non-working dependent on your parents' or spouse's health insurance. Moreover, depending on your total yearly income, you may be required to pay resident's tax in the next fiscal year.

8. Course requirements

(1) Coursework

All XPS students are required to obtain one credit for the Laboratory Course of Advanced Optical Science I or II by the end of their Master's course. In addition, they must obtain six credits for courses from the Lectures on Advanced Photon Science by the end of their first Doctoral year (at least two credits must be for courses given by a department other than their own). If a student has obtained credits for some of these courses prior to enrolling in XPS, they should apply for them to be counted. If approved, the credits will be counted toward their required coursework credits.

(2) Meetings with a secondary supervisor

Each XPS student is assigned a secondary supervisor in addition to their main supervisor. All XPS students are required to meet and report their academic progress to their secondary supervisor once every six months. See the Appendix for details of faculty members who can take on the role of secondary supervisor.

(3) Required activities for the Doctoral course

To complete XPS, students must take part in one of the three activities listed below during the first or second year of their Doctoral studies:

- a. An assignment abroad
- b. A corporate internship
- c. Joint research at other universities or research institutions

Note that all of these activities require prior application. Once your plan has been reviewed and approved, XPS may cover the travel expenses required to participate.

9. Features of the course

(1) Errantry opportunities

XPS plans to cover overseas travel expenses for students to give several successive presentations on their research results before submitting their Doctoral dissertation. Details will be announced after the selection of XPS students.

(2) International secondary supervisors

In addition to the secondary supervisors described in 8. (2), internationally distinguished researchers may be available as international secondary supervisors to support and advise XPS students in their research activities. Details will be announced after the selection of XPS students.

(3) Scientific meetings hosted or co-hosted by XPS

Students are encouraged to attend photon science meetings hosted or co-hosted by XPS, including seminars and forums.

(4) Job opportunities

XPS plans to offer jobs as Teaching Assistants and mentors supporting international students.

10. Notes

- (1) Only applications for which all of the necessary documents are submitted by the deadline will be considered.
- (2) Under no circumstances may an applicant change the contents of their application once it has been submitted.
- (3) For unforeseen reasons, changes may be made to these guidelines or the application procedures. In such cases, an announcement will be made to potential applicants.
- (4) Personal information made known to XPS through the application process will be used for the following purposes: (i) selection of XPS students (application processing and selection), (ii) announcement of selected applicants, and (iii) enrollment procedures. For selected applicants only, the information will be further used for administrative duties relating to: (i) academic affairs (e.g., registration, enrollment), and (ii) student support (e.g., employment assistance, tuition waiver applications).
- (5) Any student who is found to have made a false statement in their application, even after being selected to join the program, may have their status as an XPS student removed retroactively.

11. Contact

WINGS Desk, Graduate School Office of the Graduate School of Science, The University of Tokyo

Room 275, School of Science Bldg. 1 (Area E), 7-3-1 Hongo, Bunkyo-ku, Tokyo

Phone: 03-5841-4626

Email: wings.s@gs.mail.u-tokyo.ac.jp

[Last updated: **May, 2019**]

List of Secondary Supervisors for the
Program of Excellence in Photon Science (XPS)

Name	Title, Affiliation	Specialization
ASAI Shoji	Professor, Dept. of Physics, School of Science [Program Coordinator]	Experiments on Elementary Particles
AKIYAMA Hidefumi	Professor, Institute for Solid State Physics	Nano-Structure Physics
ANDO Masaki	Associate Professor, Dept. of Physics, School of Science	Gravitational-Wave Astronomy
BAMBA Aya	Associate Professor, Dept. of Physics, School of Science	High Energy Astrophysics, Experiment
FURUSAWA Akira	Professor, Dept. of Applied Physics, School of Engineering	Quantum Optics, Quantum Information
GODA Keisuke	Professor, Dept. of Chemistry, School of Science	Quantum Photonics, Biomedical Photonics, Laser Spectroscopy
HASEGAWA Tetsuya	Professor, Dept. of Chemistry, School of Science	Solid State Chemistry
HAYASHI Masamitsu	Associate Professor, Dept. of Physics, School of Science	Experimental Condensed Matter Physics
HOSHINO Masahiro	Professor, Dept. of Earth and Planetary Science, School of Science	Space Physics, Astroplasma Physics
IDEGUCHI Takuro	Associate Professor, Dept. of Physics/Institute for Photon Science and Technology, School of Science	Optical Science
KATORI Hidetoshi	Professor, Dept. of Applied Physics, School of Engineering	Quantum Electronics
KOASHI Masato	Professor, Photon Science Center/Dept. of Applied Physics, School of Engineering	Quantum Information, Quantum Optics
KOBAYASHI Yohei	Professor, Institute for Solid State Physics	Lasers
KOHNO Kotaro	Professor, Dept. of Astronomy, School of Science	Extragalactic Radio Astronomy
KOMORI Fumio	Professor, Institute for Solid State Physics	Surface Physics
MIDORIKAWA Katsumi	Director, Center for Advanced Photonics, RIKEN/Visiting Professor, Institute for Photon Science and Technology, School of Science	Laser Engineering
MIO Norikatsu	Professor, Institute for Photon Science and Technology, School of Science	Laser Optics
MIYOKI Shinji	Associate Professor, Institute for Cosmic Ray Research	Experimental Gravitational Wave Physics
MOTOHARA Kentaro	Associate Professor, Dept. of Astronomy, School of Science	Infrared Astronomy, Galactic Astronomy
MURAO Mio	Professor, Dept. of Physics, School of Science	Quantum Information Theory

Name	Title, Affiliation	Specialization
OHKOSHI Shin-ichi	Professor, Dept. of Chemistry, School of Science	Solid State Chemistry
OHTSUKI Tomoko	Sr. Mgr., Product Line Management, Lumentum/Project Professor, Institute for Photon Science and Technology, School of Science	Fiber Lasers
OKADA Yasushi	Professor, Dept. of Physics, School of Science	Biophysics
OZAWA Takeaki	Professor, Dept. of Chemistry, School of Science	Analytical Chemistry
SAKAI Hirofumi	Professor, Institute for Photon Science and Technology/Department of Physics, School of Science	Atomic/Molecular Physics (Experimental)
SHIMANO Ryo	Professor, Cryogenic Research Center/Dept. of Physics, School of Science	Condensed Matter Physics
SHIONOYA Mitsuhiko	Professor, Dept. of Chemistry, School of Science	Bioinorganic Chemistry, Supramolecular Chemistry
SOMEYA Takao	Professor, Dept. of Electrical Engineering and Information Systems, School of Engineering	Organic Electronics
TAKAHASHI Yoshio	Professor, Dept. of Earth and Planetary Science, School of Science	Environmental Chemistry, Geochemistry
TERASHIMA Ichiro	Professor, Dept. of Biological Sciences, School of Science	Photosynthesis, Plant Physiological Ecology
UEDA Masahito	Professor, Dept. of Physics, School of Science	Measurement Theory
UEMURA Sotaro	Professor, Dept. of Biological Sciences, School of Science	Biophysics
WALLIS Simon	Professor, Dept. of Earth and Planetary Science, School of Science	Tectonics, Structural Petrology
YAMANOUCHI Kaoru	Professor, Dept. of Chemistry, School of Science	Intense Laser Science, Physical Chemistry
YOKOYAMA Masashi	Associate Professor, Dept. of Physics, School of Science	Experimental Particle Physics
YOSHIDA Naoki	Professor, Dept. of Physics, School of Science	Astrophysics
YOSHIOKA Kosuke	Associate Professor, Photon Science Center/Dept. of Applied Physics, School of Engineering	Precision Spectroscopy
YUMOTO Junji	Professor, Dept. of Physics, School of Science	Quantum Physics, Laser Physics

*If the faculty member's name is in blue and underlined, it is linked to their website.