

Course Number	07002
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2007 「The International Priority Graduate Programs (PGP)」

~Advanced Graduate Courses for International Students~

【1. Profile of the University】

①University Department	Graduate School of Science, Tohoku University		
②President	Akihisa Inoue		
③Address (Headquarters)	〒980-8577 2-1-1 Katahira, Aoba-ku, Sendai, Miyagi, Japan		
④Contact	Division	Student Exchange Division	
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⑤Web-Address	<a href="http://www.tohoku.ac.jp/japanese/">http://www.tohoku.ac.jp/japanese/</a>		
⑥Enrollment (only Graduate School)	806 (include MEXT's Scholarship Students: 265 )		

【2. Outline of the Course】

①Course	International Graduate Program for Advanced Science
②Degree	5-year Doctoral Course
③Form	Single institution based program
④Graduate Course, Department	Graduate School of Science, Department of Chemistry
	(Address)6-3 Aramaki-Aza-Aoba, Aoba-ku, Sendai, Miyagi, Japan
⑤Collaboration (Universities, Graduate courses, Departments)	Graduate School of Science, Department of Mathematics Graduate School of Science, Department of Physics Graduate School of Science, Department of Astronomy Graduate School of Science, Department of Geophysics Graduate School of Science, Department of Chemistry Graduate School of Science, Department of Earth Science
⑥Quota	20 (include MEXT's Scholarship Students: 8 ) (include Japanese : 0 )
⑦Faculties	398 (Fulltime 244 Fulltime(other department): 96 Parttime: 58 )
⑧Representative of the Course	Job Title Dean at Graduate School of Science
	Name Osamu Hashimoto

### 【3. Contents of the Course】

With the “research first” and “open door” principles, Graduate School of Science, Tohoku University has contributed to the development of basic research for all areas of natural science such as Mathematics, Physics, Chemistry, and Earth and Planetary Science. It also has accepted a large number of students from inside and outside Japan and educated them as high quality human resources. Currently it is one of the largest Graduate Schools of Science in Japan, and continues to produce world leading-edge accomplishments in wide variety of research fields in natural science. Three Center of Excellence (21<sup>st</sup> Century COE) programs “Giant Molecules and Complex Systems,” “Exploring New Science by Bridging Particle-Matter Hierarchy,” and “Advanced Science and Technology Center for the Dynamic Earth” were awarded in 2002 and 2003 to the departments of high performance, to which all 6 departments of our Graduate School of Science participated in and have promoted to form the centers of excellence on brilliant international research and education. Based on the common philosophy in the three COE programs, “interdisciplinary international research and education,” the Graduate School of Science aims to open up new research areas and aspire development of human resources that have wide perspective in science.

The main purpose of the “International Graduate Program for Advanced Science” (IGPAS) is to provide 5-year master-doctoral level education in English for excellent international students recruited from all over the world, producing scientists with excellent expertise and wide knowledge of natural science. At the same time, it aims to educate Japanese students to exert their abilities internationally as professional scientists.

IGPAS was established in 2004, in strong connection with the aforementioned three 21<sup>st</sup> Century COE programs. All departments in the Graduate School of Science participate in the operation of IGPAS, and the Graduate School of Science has been accepting many international students and providing high quality education to them. Japanese students and non IGPAS international students are also allowed to take the lectures in English in this program, so that IGPAS plays an essential role in the internationalization of our Graduate Schools’ education. On this occasion, the Graduate School of Science closely examined to improve the course. This means that the Graduate School revised not only its educational program but also the management and the operation system to build a sustainable educational program by cooperating with the Science Basic Infrastructure Center which was newly established in April, 2007.

Main features of the IGPAS are as follows:

1. The IGPAS consists of the following three subprograms: “The Chemistry and Biochemistry Program,” “The Multi-scale Natural Science Program,” “The Earth and Planetary Science Program.” IGPAS students choose one of these subprograms as their main subject. These subprograms are interdisciplinary course, and each of them is a unique program; they are designed to pursue not only high quality areas of expertise but also interdisciplinary education.
2. The main program is a 5-year master-doctoral course, by which we can systematically educate students to achieve international level research.
3. Lectures and research guidance are conducted in English so that top international students who do not have Japanese language background can enter to and take advantage of this program.
4. Lectures in English are open to Japanese students as well, generating the international educational environment in the Graduate School of Science.

Master level curriculum includes “Frontiers in Science I,” “Frontiers in Science II” and “Internship,” two credits each, as elective classes for all three subprograms. Each subprogram has about 12 to 20 classes, two credits each, as elective classes in specialized subject. IGPAS students can also attend classes other than those in own chosen subprogram so that they can learn a wide variety of subjects from all natural science areas. Special attention is paid to the first semester

education, so that new IGPAS students can start graduate school level study in Japan smoothly. Introductory lectures given in this semester are one such example, by which a student can acquire basic knowledge and skills necessary for graduate level education and research. Apart from the lectures, six-credit seminar and ten-credit research project for Master thesis are conducted under academic advisors' supervision.

Each subprogram in Doctor level also has 2-credit special lectures. Furthermore, the Graduate School of Science newly starts offering "Internship program" for doctoral students. IGPAS students can do their internship in a private company or a research laboratory at other universities or research institutions inside or outside Japan. Participation to the Internship program is a good opportunity for students to widen their view, and it helps the Graduate School of Science build networks among research and educational communities. Moreover, six-credit seminar and ten-credit research project for Doctoral dissertation are supervised by academic advisors.

All faculty members at the Graduate School of Science are participating in IGPAS program as lecturers and/or academic advisors who are responsible for IGPAS students' education and research guidance. Also, the Graduate School of Science proactively invites international researchers who are active in the front line research as to give lectures on the most advanced research topics and give a research advice to students in that field.

In the IGPAS program, the following attention is paid to international students:

1. Lectures and research guidance are conducted in English so that international students do not need to have a Japanese Language background. On the other hand, international students may have difficulty in living in Japan without having basic Japanese Language knowledge. To support those students, Division for International Research and Education Cooperation Graduate School of Science, Tohoku University (DIRECT Office), and Center for International Exchange, Tohoku University provide them with opportunities to learn Japanese.
2. The Graduate School of Science sets an advisory board, and a main and a sub academic advisors take responsibility for IGPAS students' education and research guidance. Also, the Graduate School of Science establishes a mentor system. Foreign faculty members and bilingual staffs of DIRECT Office become a mentor to take care of IGPAS students' mental health.
3. The Graduate School of Science hires privately funded IGPAS master level students as a teaching assistant for helping Japanese students do exercise and experiment in English. The School also hires IGPAS doctor level students as a research assistant for them to concentrate on their own research.
4. The Graduate School of Science helps new IGPAS students to get along smoothly with other students and faculty staffs by having an orientation or organizing events shortly after their arrival in Japan. Also, the Graduate School of Science assigns a tutor for each new IGPAS student for one year to help academic or daily life on and off campus.

