

Course Number	06044
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2006 「The International Priority Graduate Programs (PGP)」

～Advanced Graduate Courses for International Students～

【1. Profile of the University】

①University Department	Hiroshima University Graduate School of Engineering		
②President	MUTA Taizo		
③Address (Headquarters)	〒739-8511 1-3-2 Kagamiyama, Higashi Hiroshima City, Hiroshima, Japan		
④Contact	Division	Student Support Group (Graduate Section), General Chief	
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	TEL/FAX Number	TEL: +81-82-424-7526 / FAX: +81-82-424-5461	
⑤Web-Address	<a href="http://www.hiroshima-u.ac.jp/en/international/">http://www.hiroshima-u.ac.jp/en/international/</a>		
⑥Enrollment (only Graduate School)	569(include MEXT's Scholarship Students: 191)		

【2. Outline of the Course】

①Course	Fostering Program for Practical Researchers and Engineers Distinguished in Technology Transfer
②Degree	Doctoral course (3 years)
③Graduate Course, Department	Graduate School of Engineering, Department of Mechanical System Engineering
	(Address) 〒739-8527 1-4-1 Kagamiyama, Higashi Hiroshima City, Hiroshima
④Collaboration (Universities, Graduate courses, Departments)	<ul style="list-style-type: none"> <li>• Graduate School of Engineering, Department of Artificial Complex Systems Engineering</li> <li>• Graduate School of Engineering, Department of Information Engineering</li> <li>• Graduate School of Engineering, Department of Chemistry and Chemical Engineering</li> <li>• Graduate School of Engineering, Department of Social and Environmental Engineering</li> </ul>
⑤Quota	15 (include MEXT's Scholarship Students: 7 ) (include Japanese : 0 )
⑥Faculties	38 (Full-time(only for this course):36 Full-time(at the department offering this course): 2 Parttime: 0 )
⑦Representative of the Course	Job Title: Dean & Professor of Graduate School of Engineering
	Name: YAMANE Yasuo

**【3. Contents of the Course】**

**(1) Program Outline**

This program for foreign Ph.D. students, which is both active and partially in preparation at the Graduate School of Engineering for Master course and Ph.D. students, cultivates researchers and engineers with the capability of accommodating themselves to worldwide transfer of engineering and technology taking place in R&D and manufacturing situations in this era of borderless operations. The curriculum includes thesis study under instruction by multiple instructors of different disciplines, coursework on theories and examples of technology transfer, internship at Japanese companies, exercises of technology transfer (PBL: Problem Based Learning), etc. The Ph.D. Thesis should include discussion of the transfer of the developed technology. This program cultivates researchers and engineers who can take theoretical and practical approaches to technology transfer between their native countries and abroad, in addition to professional R&D capability. Instruction on thesis study, lectures, and exercises will be conducted in English.

**(2) Contents and Features**

Figure 1 shows the curriculum structure of all programs. Each course is described below.

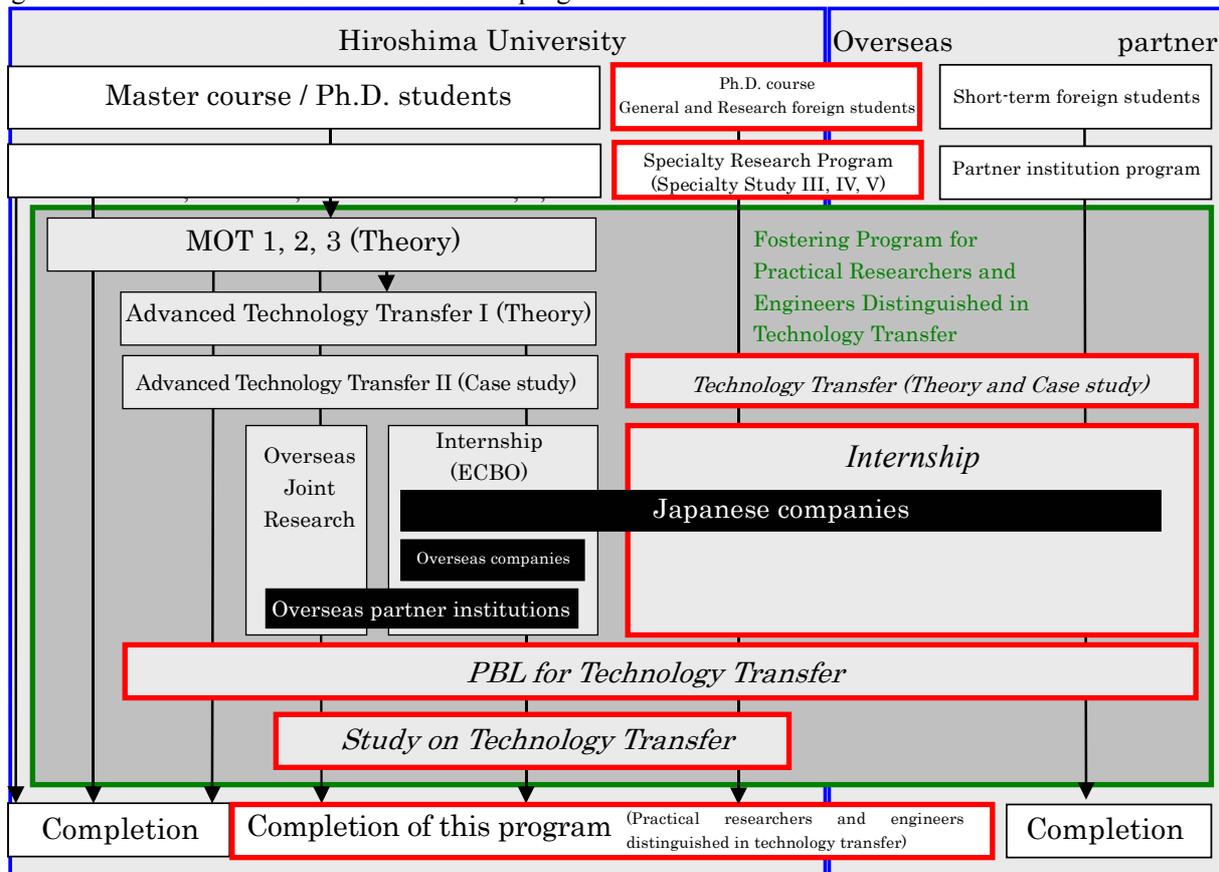


Fig. 1 Curriculum structures of "Fostering Program for Practical Researchers and Engineers Distinguished in Technology Transfer" (enclosed in the green frame) of this application, and the specialty research program / program for overseas partner institutions (enclosed in the blue frame) of this university.

Enclosed in the red frame is a course group for foreign Ph.D. students to take in "Fostering Program for Practical Researchers and Engineers Distinguished in Technology Transfer." While conducting "Special Study" (thesis research), students should master "Technology Transfer (theory and case study)", "Internship (Japanese companies)", "PBL for Technology Transfer", and "Study on Technology Transfer". Instruction on thesis study, lectures, and exercises will be conducted in English.

In the "Specialty Research Program", students conduct Special Studies III, IV, and V (thesis research) under the instruction of multiple instructors of different disciplines, to acquire technical knowledge and research capability. The fruits of this work are compiled into the Ph.D. thesis. Research instruction is conducted, taking advantage of achievements during the "Special Course for Interdisciplinary Engineering" carried out by the Graduate School of Engineering, Hiroshima University.

"Technology Transfer(Theory and Case Study)" concerns R&D and transfer of manufacturing technology. Although "Advanced Technology Transfer I" and "Advanced Technology Transfer II" emphasize the study of the export of Japanese technology, "Technology Transfer(Theory and Case Study)" adds the view of importing technology from abroad. Practical exemplification and theoretical analyses of the transfer of R&D and manufacturing technology both domestic and abroad are explained using teaching materials developed in the "MOT Educational Program on Technology Transfer for Developing Countries."

"Internship" dispatches foreign students to Japanese companies and cultivates their comprehension capability related to issues about cooperation between domestic development-manufacturing departments and overseas production sites and technology transfer, and problem-solving capabilities in connection with them.

The "Internship" coordinates industry-university cooperation type educational activities in which practical training by engineers of host companies and theoretical instruction by academic instructors specializing in manufacturing technology transfer are combined.

"PBL for Technology Transfer" is a Problem Based Learning (PBL) course. Some general Master course / Ph.D. students are dispatched to production sites at overseas factories of Japanese companies in the "Internship (ECBO: Engineers to Cross BOrders)", or to research sites at overseas partner institutions in "Overseas Joint Research." That is, similar training is conducted in an opposite way to that of the "Internship" of this program for foreign students. Furthermore, as shown in the right of Fig. 1, short-term foreign students from overseas partner institutions (at their own expense) can also receive similar training as foreign students of this program in the "Internship" after they complete the "Technology Transfer(Theory and Case Study)" course. These case examples in internship training of Japanese students, foreign students of this program, and short-term foreign students are presented and discussed in "PBL for Technology transfer." By mutually recognizing differences in position and culture between foreign students and Japanese people, students deepen their understanding about international technology transfer.

"Study on Technology Transfer" presents deliberation of issues related to overseas technology transfer in the major for Ph.D. thesis in "Specialty Research Program" under supervision by academic instructors or company engineers who are distinguished in manufacturing and technology transfer. "Ph.D. Thesis" describes investigation and discussion on technology transfer as well as the fruits of work in the major.

This program, comprising the above-mentioned contents for foreign students, is characterized as follows.

- (i) Instruction for Special Studies (thesis research) corresponding to the advancement and complication of engineering and technology is conducted by multiple instructors of different disciplines taking advantage of achievement of "Special Course for Interdisciplinary Engineering."
- (ii) Systematic education is conducted, which consists of "Technology Transfer(Theory and Case Study)", a theoretical study training process on technology transfer of R&D and manufacturing; "Internship (Japanese companies)", a practice process; "PBL for Technology Transfer", an integration process; and "Study on Technology Transfer", a research process.
- (iii) Instruction is performed by instructors and company engineers specializing in technology transfer. Investigation and discussion of technology transfer of the fruits of thesis research are added to the Ph.D. thesis.
- (iv) "Internship" provides foreign students with opportunities to comprehend technology development and manufacturing situations in Japanese companies, and to establish a human network with company engineers. This is very effective for students in exploring and considering their careers after completing this program.
- (v) "PBL for Technology Transfer" encourages foreign students and Japanese students in the mutual understanding on technology transfer. Japanese Master course students who received overseas trainings "Internship (ECBO)" or "Overseas joint research" in a position opposite to foreign students and foreign students can make presentations and undertake mutual discussion of the results of case studies, and can deepen interchange and mutual understanding. In addition, "PBL for Technology Transfer" encourages Japanese students to brush up their English proficiency and deepen exchanges with foreign students. Consequently, it contributes to globalization of university education.