

rCourse Number	06029
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2006 「The International Priority Graduate Programs (PGP)」

～Advanced Graduate Courses for International Students～

【1. Profile of the University】

①University Department	Division of Natural, Biotic and Social Environmental Engineering, Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi		
②President	Hideaki NUKUI		
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⑤Web-Address	http://www.coe.yamanashi.ac.jp/coe/va/index.html		
⑥Enrollment (only Graduate School)	95 (include MEXT's Scholarship Students: 21)		

【2. Outline of the Course】

①Course	The International Special Doctoral Course for Integrated River Basin Management		
②Degree	Doctoral Course (3 years)		
③Graduate Course, Department	Division of Natural, Biotic and Social Environmental Engineering, Interdisciplinary Graduate School of Medicine and Engineering		
	(Address) 4-3-11 Takeda Kofu, Yamanashi		
④Collaboration (Universities, Graduate courses, Departments)			
⑤Quota	10	(include MEXT's Scholarship Students: 4) (include Japanese : 2-3)	
⑥Faculties	21	(Full-time(only for this course):16 Full-time(at the department offering this course):4 Part-time:1)	
⑦Representative of the Course	Job Title	Dean of Interdisciplinary Graduate School of Medicine and Engineering (Professor)	
	Name	Yoshihiko SUZUKI	

【3. Content of the Course】

Background

The number of water problems such as floods, water shortages and environmental pollution has been increasing internationally. Especially under the pressure of population, development and climate change, water management for developing countries such in Asia is a political issue and will become severer in the future. In order to solve these increasing water problems, development of the capability to recognize local characteristics along with high technology is indispensable. River basin management particularly in the developing countries is a field with a high degree of individuality depending on the local river basin conditions. Therefore it requires not a partial expert of high technology but a talented person who can translate and apply high technology to the local conditions. Additionally, there is much demand for a talented person with international cooperativeness because water problems can be international issues. However, since there are no educational institutions which cultivate such a capability throughout the world, the shortage of human resources which can contribute to solutions to water problems is becoming a serious issue especially in Asian regions with weak economic power. On the other hand, the University of Yamanashi has formed an international research and educational network in the Asian monsoon region through the UNESCO international hydrological science plan over a period of 10 years. Based on this achievement, this course was established with the start of the 21st century COE program in the year 2003. This course gathers competent students from many countries in Asia and cultivates skilled human resources capable of solving the Asian water problems in a comprehensive way. Through these activities, it contributes to sustainable development in each region.

Purpose

In order to cope with the river basin water problems in the Asian monsoon region, this course aims at the cultivation of competent human resources which can play a central role in the international river basin human resource network of water problem experts in Asia. These experts should also be able to do research which can be internationally appreciated and should have the ability to apply research results to the actual river basin.

Outline

1. The target field is focused on integrated river basin management. By offering an internationally competitive educational program which combines advanced technologies for water management and local river basin conditions, this course meets the global demand for research and education which is indispensable for the solution to water problems in Asia and other countries.
2. This course achieves practical, interdisciplinary and integrated education, including education in English and overseas practice. Exchanges between students are also deepened and education is internationalized.
3. This course plays a leading role in the continuation of a technical exchange between postdoctoral students and Japan, and in the formation of an international network of water management researchers and technicians in order to continuously strengthen the docking of advanced technology and local river basin conditions.
4. Through the above-mentioned network, this course fosters cooperation with administrative offices, research institutions such as universities and NGOs conducting practical activities in the world and extensively accepts people who have basic expertise. This course provides education in the hope of ensuring employment assistance to these public organizations.
5. This course reforms doctoral education which tended to place too much emphasis on research instruction. This course provides substantial education through local-based field study covering hydrological circulation mechanism to epidemiology and the instruction of presentation and discussion methods at international scientific conferences.
6. This course recruits prospective students based on a relationship with universities which have concluded an exchange agreement or which are deeply connected academically through research collaborations. This course also forms a self-proliferation network by helping returnees who complete doctor's courses, enhancing coalition with other organizations and requesting prospective students' recommendations.



Features of educational content

- This course directly reflects our university's sophisticated research results concerning water problems in the curriculums. These curriculums are planned to instruct advanced technology regarding water volume, quality and habitat in river basins and to provide a method of applying the technology to local river basin conditions in Asian countries. In particular, advanced technology education is provided, such as hydrology related to integrated river basin management, river basin environmental engineering and other interdisciplinary fields (river basin planning, basin medical engineering, etc.). This course also provides education on appropriate technology in the developing countries so that students are able to receive education suitable to the conditions of their own countries.
- To develop a wider vision instead of placing a disproportional emphasis on a limited specialized field, we have adopted interdisciplinary lectures by multiple instructors and special seminars regarding advanced technology and the Asian monsoon region by guest researchers. Furthermore, the following activities enable not only academic knowledge but also the acquisition of practical knowledge and skills. Activities are provided such as practical training for advanced analysis techniques, participation in international cooperative research/ international conference management, presentations at international conferences and participation in cooperative research with administrative organizations and private enterprises.
- Through these above-mentioned activities, this course educates students on local-based technology from the viewpoint of the docking of local river basin conditions and advanced technology. This is a unique course aimed at the integration of advanced technology and practical education.
- All lectures and research supervision are given in English.

Examples of educational content

- **Lectures:** River basin hydrological simulation, Meso-scale meteorology & atmospheric pollution, Advanced Environmental & Sanitary Engineering, Terrestrial Water Quality Assessment, Advanced Environmental Bioengineering, Integrated River Basin Management, etc.
- **Special seminars:** Related to advanced technology and the Asian monsoon region by guest researchers.
- **Practical training for advanced analysis techniques:** Selection from the analysis method of using satellite data or GIS, utilization of methods of hydrological models (such as meteorological models, runoff models, sediment discharge models, groundwater models and water quality models) for water management, advanced analysis technology of heavy metals, persistent substances and endocrine-disrupting chemicals, water environment assessment by biological/ chemical indicators (including genetic information), methods of ecological water environmental assessment and others.
- **Field research:** Participation in international cooperative research/ international conference management, presentations at international conferences and participation in cooperative research with administrative organizations and private enterprises from home and abroad.
- **E-learning :** Utilization of Integrated River Basin Management Virtual Academy (E-learning system) established through the 21st century COE program.

Research instruction

In terms of research instruction, supervisory groups provide instruction not from the viewpoint of a narrow specialized field but from a wider vision. Concrete examples are routine guidance by a group of 3 instructors or more, related field seminars, an annual program-wide research presentation and an intermediate presentation for the doctoral dissertation in the last year of the course. This group guidance improves the quality of instruction for students and removes the possibility of students not acquiring the degree within the average duration.

Selection methods of scholarship candidates

Admissions are comprehensively conducted based on the results of documentary examination of research performance and oral examination. Each detail is as follows:

- **Documentary examination:** Determination of actual achievements and ability to acquire the degree within 3 or 2 years' duration. (Possible requirement of the creation of 2 or more academic papers for review.) If other data such as GPA is available, these values will be referenced.
- **Oral examination:** Through the presentation of research performance and proposals by the applicants and questions and answers, the necessary capability for the research and qualifications which are essential for a member of the international river basin human resources network will be estimated. Evaluation items are (1) adequacy of the research proposal, (2) research capability, (3) communication skills in English, (4) high motivation and morale for utilization of the research for the development of home countries, and (5) coordination aptitude.

The oral examination is also available at the international meetings and so on.