

**2014 Fall (October) Admission**  
**Today's Engineering Research**

**International Doctoral Courses**  
**in**  
**English**

# **Application**

# **Guidelines**

Application Period:  
June 19, 2014 – June 25, 2014

**Akita University**  
**Graduate School of Engineering and Resource Science**

<http://www.eng.akita-u.ac.jp/>

**2014 Fall (October) Admission**  
**Today's Engineering Research**  
**International Doctoral Courses**  
**Graduate School of Engineering and Resource Science, Akita University**  
**Special Academic Courses in English**  
**Application Guidelines**

Today's Engineering Research Program offers Doctoral Courses for foreign and Japanese students who have international ambitions. Instruction will be given in English. The courses will allow the students to develop their abilities to work in an international setting while they study for their Doctor's Degree in Engineering.

### 1. Enrollment Capacity

Major	Enrollment Capacity
Geosciences, Geotechnology, and Materials Engineering for Resources	a few
Department of Life Science	a few
Advanced Materials Engineering	a few
Production and Civil Engineering	a few
Electrical, Electronic and Computer Systems Engineering	a few

### 2. Application Qualifications

- The status of residence of a incoming foreign student must be "College Student."
- Applicants must have English proficiency sufficient to comprehend the classes offered and must qualify for one of the five requirements listed below.
  - (1) Have a Master's Degree or will be able to receive it by the end of September, 2014.
  - (2) Have a degree from a foreign institution that is equivalent to a Japanese Master's Degree or will be able to receive it by the end of September, 2014.
  - (3) Have received or will be able to receive a Master's Degree or a degree equivalent by the end of September, 2014 by completing a correspondence course offered by a foreign institution in Japan.
  - (4) Have obtained special recognition from the Japanese Ministry of Education, Culture, Sports, Science and Technology (refer to Monbusho Notification 118, 1989).
  - (5) Be 24 years of age or older on September 30, 2014, and is considered to have an academic ability that is equivalent to or higher than a Master's Degree after an individual Application Qualification evaluation conducted by the Graduate School of Akita University.

**Note :** If the application is made on the basis of (4) or (5) above, the Pre-evaluation for Application Qualification is required prior to the submission of application.

### 3. Pre-evaluation of Application Qualification

- (1) Applicants applying under the requirement (4) of the Application Qualifications must be

those who have been engaged in research at such organizations as a college or a research institute for no less than two years doing postgraduate work, and have been recognized by the Graduate School of Akita University as having the academic ability equivalent to a Master's Degree or higher based on the results produced from the said research.

- (2) Applicants applying under the requirement (5) of the Application Qualifications must satisfy one of the following categories :
  - 1) Be 24 years of age or older on September 30, 2014, and have graduated from such institutions as junior colleges, higher technical schools, or have completed courses in other educational institutions. Must also have been acknowledged by the Graduate School of Akita University to have produced academic achievements equivalent to a Master's Degree thesis or higher in such forms as books, papers, presentations, reports, or patents.
  - 2) Have been engaged in the fields of science/engineering for no less than 2 years and have been recognized by the Graduate School of Akita University to have produced the academic achievement equivalent to a Master's Degree thesis or higher in such forms as books, papers, presentations, reports, or patents.
- (3) Applicants applying under the requirement (4) or (5) of the Application Qualifications must submit ***through a supervising professor whom the applicant wishes to study under*** : a) Pre-evaluation Request for Application Qualification (attached herein), b) Academic Record for Approval of Application Qualification (attached herein), c) Record of Academic Achievements (attached herein), d) Proof of Graduation/Completion, and e) copies of published papers to the Admissions Office of Graduate School of Akita University for Pre-evaluation of Application Qualification. The request must be made from May 26, 2014, to no later than May 30, 2014. If mailed, please allow enough time for the documents to arrive at the office by the deadline of May 30, 2014.
- (4) Applicants will be notified of the results of the Pre-evaluation for Application Qualification by June 16, 2014.
- (5) Once approved for Application Qualification, applicants should proceed with the application procedures as specified herein.

#### **4. Submission Period and Mailing Address**

- (1) **Submission dates :**

From June 19, 2014 to no later than June 25, 2014.

  - 1) If brought in person, application documents are accepted at the Admissions Office between 9:00 a.m. to 4:00 p.m.
  - 2) If mailed, application documents must be sent by registered mail and "Application to Doctoral Course, Graduate School of Engineering and Resource Science" must appear in red on the front side of the envelope. The documents must reach the Admissions Office no later than 4:00 p.m. on June 25, 2014.
- (2) **Mailing address:**

Admissions Office  
Graduate School of Engineering and Resource Science  
Akita University  
1-1 Gakuen-cho, Tegata  
Akita-shi 010-8502 Japan  
Tel. : 018-889-2313

(From overseas: Dial international prefix, then 81-18-889-2313.)

E-mail : kn08@jimu.akita-u.ac.jp

## 5. Application Procedures

### (1) Documents to be submitted

#### ① Application for Admission

Requested information must be entered on the designated form (attached herein).

#### ② ID Photo Card

A frontal-view photograph of the applicant's face, without a hat, 4.5 cm x 3.5 cm in size and taken within three months prior to this application must be pasted in the designated area of the ID photo Card (attached herein).

#### ③ Certificate of Completion or Prospective Completion

##### Certificate of Graduation

Applicants having or will be able to receive Master's Degree :

A certificate of either completion or prospective completion of the Master's Course issued by the university or the graduate school last attended should be submitted.

Applicants having completed undergraduate work only:

A graduation certificate issued by the university or the faculty last attended should be submitted.

#### ④ Academic Record Transcripts

Official transcripts in sealed envelope from the university or the faculty attended must be submitted.

#### ⑤ Letter of Recommendation

Letter of Recommendation either in Japanese or English must be prepared in sealed envelope by the applicant's supervising instructor of the school last attended (form not designated).

#### ⑥ Abstract of Master's Thesis

An abstract must be written on the form (attached herein) in 500 or less words. In the case of an applicant with prospective completion of a Master's Course, the title of the Master's Thesis and an outline of the research process must be entered on the form. If papers, academic presentations, or patent licenses are available in print, a copy of such needs to be enclosed.

(Not needed if applying under the requirement (4) or (5) of the Application Qualifications.)

⑦ Research Plan

The desired field or topics for study must be explained with the outline of research plan on the form (attached herein) in 300 or less words ***upon consultation with the supervising professor whom the applicant wishes to study under.***

⑧ Record of Academic Achievements

Books, papers, academic presentations, patents, practical new designs, or other specific activities in scientific groups or within the community, are to be explained on the form (attached herein).

⑨ Proof of Evaluation Fee Payment

Application within Japan :

The Evaluation Fee is 30,000 yen.

The name of the applicant and other required information must be entered on enclosed money transfer form (Yubin Furikae). The fee must be paid and deposited at a post office within one month prior to the end of the application submission period. “Proof of Postal Money Transfer” received at the time of the deposit must be pasted on the attached Proof of Evaluation Fee Payment Form and submitted with other application documents.

Applications from overseas :

Evaluation Fee is 30,000 yen. When depositing from an overseas bank, please make sure that the fee is sent by Telegraphic Transfer to the (below) bank account in yen. Payment made by other currency will not be accepted. Any cost for the transfer is to be paid by the applicant.

Please enclose a copy of “application for remittance” when mailing the admission application documents.

1. Amount : 30,000 yen (The fee must be received in yen)
2. Remittance Method : Telegraphic Transfer
3. Remittance Tee : to be paid by the payer
4. Remittance Period : June 5, 2014-June 25, 2014 Japan time must be observed
5. Remittance Information :

Bank Name : Akita Bank, Ltd.

Branch : Tegata Branch

Address : 160-1, Aza-Yamazaki, Tegata, Akita-shi, Akita, 010-0851 Japan

Account Number : 688502

Recipient : Akita University

Bank Identifier Code (SWIFT) : AKITJPJT

**Note:**

- ① When filling out the “Application for Remittance” , please enter “Evaluation fee” as “Purpose of Remittance” , and enter “applicants name” in the message box.
- ② After remitting the evaluation fee, Please send an e-mail to that effect to Admission Office as soon as possible.
- ③ In case of remitting the evaluation fee from the interior of Japan, Please send an e-mail to

that effect to Admission Office.

Admission office will give instructions to you.

Please don't make a remittance before receiving instructions.

- ④ If the evaluation fee received does not meet the required amount of 30,000 yen, the application procedure will be considered incomplete, and the application will not be accepted. The Evaluation Fee will be returned to the applicant, but the remittance fee will be withheld.

Once application procedures are fully completed, the evaluation fee will not be returned. However, if for some reason the application can not be made after the fee has been paid, a refund will be considered. For the refund consideration, please contact the Bursar Section of the Accounting Division or the Admissions Office within one month following the Application Period.

Applicants scheduled to complete the Graduate School of Engineering and Resource Science Master's Course in September of 2014 are exempt from paying this fee.

⑩ Other

- 1) Applicants currently enrolled in a doctoral course at another university must submit written permission from the dean of that university in order to apply for this course (designated form attached herein).
- 2) Applicants who live in Japan and do not have Japanese citizenship must submit a Certified Copy of Alien Registration issued by the municipality where they reside.
- 3) Applicants residing overseas must submit an authorized certificate of his/her family register or proof of citizenship from the home country.

**Note:**

- a. Applicants who completed or will be able to complete the Master's Course in either the Graduate School of Engineering and Resource Science, or the Mining College by September, 2014, are not required to submit Academic Record Transcripts or Certificate of Completion/Prospective Completion.
  - b. Applicants who are permitted to apply on the basis of the requirements (4) or (5) of the Application Qualifications are exempt from submitting a graduation or completion certificate, but must submit sealed Academic Record Transcripts issued by the university last attended.
- (2) Important notices for submitting documents
- 1) No application will be accepted unless all documents mentioned above are fully and accurately completed.
  - 2) Once submitted, documents will not be returned to applicants for any reason.
  - 3) Applicants are not allowed to change majors after submission of application.
  - 4) If Contact Address entered in the application form changes after submission, the Admission Office must be promptly notified of such change.
  - 5) When preparing the attached forms, a word processor may be used.

## 6. Evaluation of Applicants

Admission is based on analysis of all documents submitted.

## 7. Pre-consultation for Disabled Applicants

As a preliminary step to the application process disabled applicants (refer to the chart below), who need special consideration during either the application process or the course itself, must submit a document detailing the items listed below (form not designated). A medical certificate must be prepared by a doctor, and contact with the Admission Office must be made for consultation no later than May 30, 2014. Early consultation is recommended since advance preparation may be needed in cases of severe disability.

- ① Desired major and name, age, contact address, and telephone number of the applicant.
- ② Type and degree of disability.
- ③ Detailed explanation of care needed during application and course study.
- ④ Special preparation and care taken in the university last attended.
- ⑤ Description of everyday life.
- ⑥ Name, address, and telephone number of the university last attended.

If needs arise after the deadline of May 30, 2014 due to accident or other contingency, please contact the Admissions Office immediately.

Type of Disability	Extent of Disability
Visual	Those with eyesight of less than 0.3 with both eyes (Universal Eyesight Test Chart) or have ophthalmologic functional disorders that do not allow easy recognition of normal size letters or diagrams, even with the use of a magnifying glass.
Hearing	Those with an auditory capacity of more than 60 decibels (Audiometer testing) who have difficulty listening to normal talking even with a hearing aid.
Physical	1. Those who are not capable of performing basic daily tasks such as walking or writing even with use of orthopedic or prosthetic devices. 2. Those with physical disabilities not as severe as the above but who need constant medical assistance and observation.
Health	1. Those who are under constant medical restrictions due to prolonged chronic respiratory, kidney, nervous system illness, malignant growth, or other disorder. 2. Those placed under medical restrictions due to prolonged weak or feeble health.
Other	Those not specifically mentioned above, yet need special consideration when either applying for admission or attending classes during the course of study.

Translated from the original by the Graduate School of Akita University.

### Note:

- a. The above are in conformity with Article 22-3 of School Education Law Enforcement Regulations.
- b. Advance contact is also requested if the applicant uses a hearing aid, crutches, or a wheelchair on an everyday basis.

## 8. Acceptance Notification

Results are tentatively scheduled to be e-mailed to all applicants at 1:00 p.m on July 15, 2014.

Telephone inquiries will not be honored.

Applicants residing overseas will be notified of the results by the supervising instructor whom the applicant will have chosen to study under.

## **9. Admissions Procedures**

- (1) Details for Admission Procedures will be sent with the Letter of Acceptance.
- (2) School Fees, as explained below, must be paid in full upon entrance as a part of Admission Procedures.

① Admission fee: 282,000 yen. (subject to change)

Those scheduled to complete the Akita University Graduate School of Engineering and Resource Science Master's Course in September of 2014 and wish to continue study in this program are exempt from the admission fee.

② Tuition : 267,900 yen for the first semester or 535,800 yen for the first academic year. (subject to change)

### **Note :**

- a. Admission fee paid will be not refunded for any reason.
  - b. The above school fees are projected amounts and are subject to change before or during the courses. Revised admission fee will apply to all new students if the revision takes place before the end of the Admission Procedure Period. If the tuition is revised at the time of admission or during the course, the new tuition takes effect at the time of revision.
  - c. If a candidate cancels his/her admission before September 26, 2014, after completion of the Admission Procedures due to unavoidable circumstances, the tuition paid may be refunded upon the payer's request only after designated procedures are completed.
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- (3) Other information
    - 1) Those with an excellent academic standing yet who have difficulty paying the admission fee due to financial circumstances and those who demonstrate other financial needs may be eligible upon screening to apply for financial aid. Those accepted will be either exempt from paying all or half of the admission fee, or may be allowed to pay the fee at a later date.
    - 2) Those with an excellent academic standing yet who have difficulty paying the tuition due to financial circumstances and those who demonstrate other financial needs may be eligible upon screening to apply for financial aid. Those accepted will be either exempt from paying all, half or a third of the tuition, or may be allowed to pay the fee at a later date.
    - 3) Japanese nationals may be found eligible, upon screening, to take out a student loan through the Japan Student Services Organization. Monthly amounts of 50,000 yen to 150,000 yen can be selected. There is a limit on the number of recipients allowable.

2014 Fall (October) Admission  
 Doctoral Courses  
 Graduate School of Engineering and Resource Science, Akita University  
 Application for Admission

<b>Special Applications</b>	<b>Today's Engineering Research</b>	<b>Application No.</b>	
		※	
<b>Desired Major</b>			
<b>Desired Course</b>			
<b>Desired Supervisor</b>			
<b>Name of Applicant</b>			<b>Sex</b>
<b>Date of Birth</b>	_____		<b>Male / Female</b>
	month	day	year
<b>Educational History</b>	<u>Undergraduate Level</u>		
	Name of School:		
	Major:		
	Date of Graduation:		
<b>Educational History</b>	<u>Postgraduate Level</u>		
	Name of School:		
	Course/Major:		
	Date of Completion:		
<b>Current Employment</b>	Name of Employer		
	Address:		
	Tel.: _____		postal code      country
<b>Current Address</b>	Address:		
	Tel.: _____		postal code      country
	Mail address:		
<b>Contact Address</b>	Address:		
	Tel.: _____		postal code      country

Note:

1. ※ Official use only.
2. Please use BLOCK LETTERS and BLACK INK
3. Contact Address is where applicant wishes to receive correspondence.
4. Detailed information is requested in the Curriculum Vitae (reverse side).

## Curriculum Vitae

<b>Education</b> <u>Japanese nationals</u> List high school first. Enter research experience also. <u>Overseas students</u> List all educational institutions starting with elementary school.	From:	To:	
	From:	To:	
<b>Employment</b>	From:	To:	
	From:	To:	
<b>Qualifications and Licenses</b>	Date:		
	Date:		
	Date:		
<b>Achievements</b>	Date:		
	Date:		

**2014 Fall (October) Admission**  
**Graduate School of Engineering and Resource Science**  
**Akita University**  
**Doctoral Courses**

**ID Photo Card**

Special Applications	Today's Engineering Research
Application No.	※
Desired Major	
Desired Course	
Name	
<div style="border: 1px dashed black; padding: 10px; width: fit-content; margin: 0 auto;"><p>Please paste ID photo. (4.5cm x 3.5cm) Upper frontal view of applicant without a hat.</p></div>	

Photo must be taken within 3 months prior to application.

※Official use only.

## Abstract of Master's Thesis (No. 1)

Graduate School of Engineering and Resource Science, Akita University

Application No.	※	Name		Graduate School Attended	Name: Date attended: Course: Completed / Prospective Completion
Desired Major				Desired Course	
				Desired Supervisor	
Master's Thesis Title					

Abstract should be in 500 words or less.

## Abstract of Master's Thesis (No. 2)

Graduate School of Engineering and Resource Science, Akita University

Application No.	※	Name		Desired Major	
				Desired Course	
				Desired Supervisor	

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Abstract should be in 500 words or less.

# Research Plan

Graduate School of Engineering and Resource Science, Akita University

Application No.	※	Name		Desired Major	
				Desired Course	
				Desired Supervisor	

Research Plan should be in 300 words or less.

For applicant currently enrolled in a doctoral course at other graduate school.

Application No.	※
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※Official use only

## Application Permission

To the Dean  
of the Graduate School of Engineering and Resource Science, Akita University

Applicant's Name: \_\_\_\_\_

Date of Birth: \_\_\_\_\_  
month day year

I hereby give permission for the above applicant to apply for the 2014 Fall Doctoral Course offered by the Graduate School of Engineering and Resource Science, Akita University.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

School Name: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_  
month day year

# Record of Academic Achievements (No. 1)

Graduate School of Engineering and Resource Science, Akita University

Application No.	※1	Name		Desired Major	
			Desired Course		
			Desired Supervisor		
Title of Master's Thesis		※2			
Record of Employment	Period of Employment	Name of Employer	Description of Work		
Description of past work related to research (300 words or less)					

※1 Official use only.

※2 Title of Master's Thesis is not required if the applicant has not written a thesis.

## Record of Academic Achievements (No. 2)

Graduate School of Engineering and Resource Science, Akita University

Application No.	※	Name				
			Desired Major			
			Desired Course			
		Desired Supervisor				
Titles of papers, presentations, reports, patents, etc.			Date, volume, etc.	Name of publisher, journal, conference, etc.	Other (Co-author or co-presenter)	

Note: 1. Enter the information in chronological order.  
 2. Copies of academic papers are required.  
 3. ※ Office use only.





# Proof of Evaluation Fee Payment Form

Application No.	※
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※Official use only

Applicant's Name	
Desired Doctoral Course	

<p>Please paste Proof of Payment for Evaluation</p>
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**Note:**

Please make sure the date of payment is visible on the pasted Proof of Payment.

## Today's Engineering Research

### International Doctoral Courses

Graduate School of Engineering and Resource Science, Akita University

### Curriculum and Academic Staff

#### Department of Geosciences, Geotechnology, and Materials Engineering for Resources (資源学専攻)

Divisions (講座)	Courses (科目)	core/elective (必修・選択の別)	Credits (単位数)	Academic Staff (担当教員)
Earth Sciences (資源地球科学講座)	Advanced Geochemistry of Hydrothermal Solutions (鉱液化学特論)	elective	2	Daizo Ishiyama (石山大三)
	Advanced Geology of Ore Deposit (金属鉱床学特論)	elective	2	Akira Imai (今井 亮)
	Theory of Stratigraphic Classification (層位学特論)	elective	2	Tokiyuki Sato (佐藤時幸)
	Sedimentology (堆積学詳論)	elective	2	Takashi Uchida ⑰ (内田 隆)
	Advanced Volcanic Petrology (火山岩岩石学)	elective	2	Masatsugu Yamamoto ⑰ (山元正継)
	Magma Chemistry (マグマ化学)	elective	2	Tsukasa Ohba (大場 司)
	Geochemistry of resource geology and environment (資源地質環境学)	elective	2	Yasumasa Ogawa (小川泰正)
Advanced Earth Material Science (資源地球物質科学特論)	elective	2	Toru Sugawara (菅原 透)	
Technology for Resources and Environment (資源環境学講座)	Energy Resources Engineering (エネルギー資源工学)	elective	2	Hikari Fujii (藤井 光)
Environmental and Resources Recycle Technology (環境資源サイクル工学講座)	Advanced Mineral Processing (資源処理応用工学)	elective	2	Atsushi Shibayama (柴山 敦)

#### Department of Life Science (生命科学専攻)

Divisions (講座)	Courses (科目)	core/elective (必修・選択の別)	Credits (単位数)	Academic Staff (担当教員)
Life Science (生命科学講座)	Molecular Biological Chemistry (分子生物化学)	elective	2	Hideaki Itoh (伊藤英晃)
	Analytical Chemistry in Life Sciences (生命分析化学)	elective	2	Nobuaki Ogawa (小川信明)
	Molecular Biology of Disease (疾患分子生物学)	elective	2	Hideki Wakui (涌井秀樹)
	Evolutionary Biology in Medicine (分子適応生命科学)	elective	2	Wataru Nunomura (布村 渉)

#### Department of Advanced Materials Engineering (機能物質工学専攻)

Divisions (講座)	Courses (科目)	core/elective (必修・選択の別)	Credits (単位数)	Academic Staff (担当教員)
Advanced Materials Engineering (機能材料工学講座)	Advanced Magnetic Materials (磁性材料工学)	elective	2	Hitoshi Saito (齊藤 準)
	Advanced Magnetic Thin Films (磁性薄膜工学)	elective	2	Satoru Yoshimura (吉村 哲)
Environmental Chemistry and Chemical Engineering (環境応用化学講座)	Organic Synthetic Chemistry for Functional Molecules (機能分子合成化学)	elective	2	Fumio Hamada ⑮ (濱田文男)
	Organic Functional Materials (有機機能材料学)	elective	2	Mitsutoshi Jikei (寺境光俊)

**Department of Production and Civil Engineering (生産・建設工学専攻)**

Divisions (講座)	Courses (科目)	core/elective (必修・選択の別)	Credits (単位数)	Academic Staff (担当教員)
Production System Engineering (生産システム工学講座)	Mechanics of Material Systems (システム材料評価学)	elective	2	Yotsugi Shibuya (渋谷 嗣)
	Mechanics for Vibrational Modes in Clusters (基準振動特論)	elective	2	Eiji Uegaki ⑮ (上柿英二)
	Nano magnetic Materials Engineering (ナノ磁性材料工学)	elective	2	Yoshiyuki Yamamoto (山本良之)
	Characterization of subsurface structure (表面構造評価学)	elective	2	Makoto Yamaguchi (山口 誠)
	Joining of Engineering Materials (機械材料接合工学)	elective	2	Osamu Kamiya (神谷 修)
	Ultraprecision Measurement System (超精密計測工学)	elective	2	Eiki Okuyama (奥山栄樹)
	Advanced Engineering of Micro/Nano Materials (機械微小材料特論)	elective	2	Mikio Muraoka (村岡幹夫)
	Advanced Surface Processing Engineering (表面加工工学特論)	elective	2	Mamoru Takahashi (高橋 護)
	System Ecodesign Engineering (システムエコデザイン工学)	elective	2	Nozomu Mishima (三島 望)
	Thermal Energy Conversion Engineering (熱エネルギー変換工学)	elective	2	Makoto Tago (田子 真)
	Advanced applied Fluid Mechanics (応用流体力学特論)	elective	2	Hiroaki Hasegawa (長谷川裕晃)
	Heat Transfer Enhancement (熱移動促進工学)	elective	2	Takahiro Adachi (足立高弘)
Civil Engineering (社会基盤工学講座)	Advanced Structural Material Engineering (建設材料学特論)	elective	2	Hidenobu Tokushige (徳重英信)
	Regional and Urban Planning (地域・都市計画学)	elective	2	
Welfare System Engineering (福祉システム工学講座)	Control Engineering for Biomechanisms (生体運動制御工学)	elective	2	Hitoshi Doki ⑰ (土岐 仁)
	Intelligent and Digital Control Systems (知能電子制御工学)	elective	2	Akihiro Naganawa (長縄明大)
	Biomedical Engineering (生体工学特論)	elective	2	Takehiro Iwami (巖見武裕)
	Biomedical Fluid Mechanics (生物・医用流体工学)	elective	2	Masahide Nakamura (中村雅英)
	Fracture and Strength of Materials (破壊強度学)	elective	2	
Structural Elastic Engineering (構造機器弾性工学)	elective	2		

**Department of Electrical, Electronic and Computer Systems Engineering (電気電子情報システム工学専攻)**

Divisions (講座)	Courses (科目)	core/elective (必修・選択の別)	Credits (単位数)	Academic Staff (担当教員)
Electrical and Computer Systems Engineering (電気情報基盤システム工学講座)	Advanced Electrical and Computer Systems Engineering (電気情報基盤システム工学特論)	elective	2	Education Faculty (電気情報基盤システム 工学講座教員)
Electronic and Computer Systems Engineering (電子情報基盤システム工学講座)	Advanced Electronic and Computer Systems Engineering (電子情報基盤システム工学特論)	elective	2	Education Faculty (電子情報基盤システム 工学講座教員)

⑮ These professor will retire by the mandatory retirement regulation in March 2015.

⑯ This professor will retire by the mandatory retirement regulation in March 2016.

⑰ These professor will retire by the mandatory retirement regulation in March 2017.

# Department Outlines

## **Department of Geosciences, Geotechnology, and Materials Engineering for Resources**

The demand for global resources is predicted to increase in spite of efforts to control consumption. The greatest tasks facing humanity in the 21st century will be dealing with an increased demand for resources and finding a solution to environmental problems caused by the consumption of resources. The recycling of resource materials is of utmost importance in relation to these tasks.

This department is composed of research fields in the areas of exploration, environmental protection, and recycling of profitable resource materials. These fields are directly related to the harmonization of human activity with nature. A unique feature of this department is that it uses an integrated global understanding in its approach. Our purpose is to produce talented researchers and engineers who possess a broad knowledge of current issues and who will have special talents necessary for the future. To achieve our purpose the department has three divisions : 1. Earth Sciences, 2. Technology for Resources and the Environment, and 3. Environmental and Resource Recycle Technology. Each division has its own course study as well as research programs, although collaboration courses (between divisions) are also available.

## **Department of Life Science**

The Department of Life Science offers a variety of advanced education and study of basic biological and chemical sciences including cell biology, molecular biology, biochemistry organic chemistry and analytical chemistry. The department also offers education and advanced study of applied biology of diseases and applied chemistry of biological materials. By encouraging positive attitude to accomplish important discovery in life sciences and development of novel techniques, the department raises leaders in the life science field, including scientists, academics, engineers and other scientific specialists.

The Department Life Science includes only one division: the Division of Life Science. The Division of Life Science consists of two scientific fields: biology and chemistry fields. In the biology field, programs of education and study for biochemical analysis of proteins, molecular imaging in living cells, molecular biology of disease, and environmental response of proteins are included. In the chemistry field, programs of education and study for analytical chemistry of biological and environmental materials, development of spectroscopic techniques to analyze biological interactions, development of chemically modified useful surfaces, development of useful cyclic organic compounds, and theoretical calculation of molecular structures and interactions are included.

## **Department of Advanced Materials Engineering**

Substances or materials play an essential part in modern technology. Progress in science and technology depends greatly on the variety of uses of materials, and a proper choice in processing for the fabrication of new substances. The ability to integrate various types of knowledge creatively is vital for future development in materials engineering. Fundamental knowledge also remains important in each specific area of metallic engineering, industrial inorganic chemistry, synthetic organic chemistry, and chemical engineering. Macroscopic properties and functions of materials must be understood from a microscopic interpretation based on such elementary constituents as molecules, atoms, ions, and electrons, along with their bonds and associated structures.

This department course is composed of two divisions: The Advanced Materials Engineering Division, and the Division of Environmental Chemistry and Chemical Engineering. Each course helps the student understand advanced materials engineering by studying integrated concepts from the basics to application. Such things as physical properties, chemical activities, production processes, and the analysis/synthesis of new functional materials are studied. Our goal is to educate students into becoming outstanding researchers and engineers who will responsibly handle materials needs in the future.

## **Department of Production and Civil Engineering**

Production based on an understanding of basic life needs that effectively responds to innovation using information technology in an aging society where there are fewer children is necessary for sustainable human development. The creation of a recycling-oriented society using long- and short-term strategies is expected from the aspects of both a stable world-wide energy supply and the protection of global and local environments.

To meet such needs this department offers programs of education and research in both mechanical and civil engineering. Our department has three divisions. The Production Engineering Division is concerned with producing value-added mechanical devices in a competitive market under sustainable human developmental thinking within a global environment. The Civil Engineering Division is concerned with measuring and planning for the maintenance and production of life in view of disaster-prevention and security needs. The Welfare System Engineering Division is concerned with the development of assistive devices for aged and disabled persons, keeping in mind a regional environment that must prepare for an aging society with a declining number of children.

## **Department of Electrical, Electronic and Computer Systems Engineering**

The advent of today's technology-oriented society is dependent on the academic contribution of electrical, electronic, and information engineering. It is expected that progress in information technology (IT) on the basis of electrical and electronic advances will play an important role in a highly advanced information-oriented society. There has been a sudden increase in problems with the development of frontier technologies involving both interdisciplinary fields and the harmonization of developing technology with the natural environment. These problems can not be solved by any single technology from a single field. They must be transversely and systematically analyzed by the multi-technologies of several fields.

This department is comprised of two divisions that combine electrical and electronic engineering, and information engineering. The divisions are called Electrical and Computer Systems Engineering and Electronic and Computer Systems Engineering. Our purpose is to train engineers and researchers having an understanding of high technology to cope with rapid change. We provide teaching and research routes which concentrate not only individually, but synthetically and systematically with multi-technologies of such fields as conversion, transport technology, electrical energy control, environmental image measurement, high speed diagnosis of computer hardware, optoelectronic devices, electromagnetic environmental instrumentation, living body instrumentation, and information processing.