October 2021 & April 2022

Special Admission for International Students

Admission Guidelines of the Doctoral Program

Graduate School of Engineering

Kyushu Institute of Technology

（Kyutech）

1. Number of Students to be Accepted

Refer to page 19 of the “Overview of Graduate School of Engineering” for details on the above subject area of examination.

Department	Subject Area of Examination		Number of Students to be Accepted	
			April 2022 admissions	October 2021 admissions
Department of Engineering	Area1	Architecture Course	To Be Confirmed	To Be Confirmed
	Area2	Civil Engineering Course		
	Area3	Control Engineering Course		
	Area4	Mechanical Engineering Course		
	Area5	Mechanical and Space Systems Engineering Course		
	Area6	Electrical and Space Systems Engineering Course		
	Area7	Electrical Engineering Course		
	Area8	Electronic Engineering Course		
	Area9	Applied Chemistry Course		
	Area10	Materials Science and Engineering Course		

2. Qualification to Apply

Applicants who meet the following two requirements are qualified to apply for the Special Admission.
Requirement 1: Applicants must be non-Japanese citizens and hold or will obtain the legal resident status of “Student” from the Japanese authority.

Requirement 2: Applicants must meet at least one of the following conditions.

(Conditions)

1. Applicants who have acquired or are expected to acquire a master’s degree or professional degree in a foreign country by March 2022. Professional degree is defined by Section 5-2 of the Degree Regulations (Ordinance No. 9 of Ministry of Education, Culture, Sports, Science and Technology enacted in 1953) in accordance with Article 104-1 of the School Education Law. (Applicants applying for October 2021 admissions must acquire the degree by September 2021. The following articles are on the same condition.)
2. Applicants who have taken a correspondence course in Japan offered by a foreign educational institution and have received or are expected to receive a master’s degree or professional degree from said institution by March 2022..
3. Applicants who have completed a graduate school course from an educational institution in Japan which offers a graduate school course which operates within the framework of the education system of a foreign country and is specifically designated by the Minister of Education, Culture, Sports, Science and Technology, and have received or are expected to receive a degree equivalent to a master’s degree or professional degree from said institution.
4. Applicants who have completed a master’s degree course at the United Nations University, and have received the equivalent to a its master’s degree.
5. Applicants who have engaged in research at a college, university, research institute etc. for at least two years after graduation from a university, and are recognized by the Kyushu Institute of Technology (hereafter: “this Institute”) as having academic ability equal to or surpassing students who have a master’s degree or professional degree, judging from the results of

the said research.

6. Applicants who have successfully completed sixteen years of education at an educational institution in a foreign country, or have successfully completed sixteen years of education through a correspondence course offered by a foreign educational institution in Japan, and have engaged in research at a college, university or research institute for at least two years, and also are recognized by this Institute as having academic ability equal to or surpassing students who have a master's degree or professional degree, judging from the results of the said research.
7. Applicants who have been recognized by this Institute, based on individual screening of admission requirements, as having academic ability equal to or surpassing students who have received a master's or professional degree, and is at least 24 years old or will be 24 years old by March

(Note)

- A person who have graduated or will graduate from Japanese universities in Japan is not qualified to apply for the Special Admission.
- A person who meets either 5, 6 or 7 of the above requirements must submit an application form of Individual Screening of Qualification for Application. (download from : https://www.kyutech.ac.jp/english/admissions/guidelines/tobata_doctor.html)
- Important schedule of screening of qualification to apply is as follows.

Applying for	Submission Period for Individual Screening of Qualification	Notification of Screening Results
October 2021	From April 26th (Mon) until May 6th (Thu), 2021	May 14th (Fri), 2021
April 2022	From April 26th (Mon) until May 6th (Thu), 2021	May 14th (Fri), 2021
	From September 24th (Fri) until September 30th (Thu), 2021	October 8th (Fri), 2021

3. Online Registration Prior to Apply

Online registration must be completed prior to apply by following link.
http://www.guide.52school.com/guidance/net-kyutech-g/eng/

The Online registration period

Applying for:	Application Submission Period
October 2021	From May 12th (Wed) until May 25th (Tue), 2021
April 2022	From May 12th (Wed) until May 25th (Tue), 2021
	From October 8th (Fri) until October 21st (Thu), 2021

4. How to Apply (Application Submission)

After completion of online registration, the following documents must be submitted to apply.

Category	Document	Note
Printed documents of the online registration	(1)Application confirmation sheet (for submission)	Print this out after you have finished the online registration.
	(2)Photo card	Prepare your photograph that meets the conditions below, write your name and desired department on its back, and paste it to the photo card. The photograph must be: i. the applicant' s upper body, frontal view without a cap/hat, and taken within three months; ii. 4.5 (height) x 3.5 (width) cm; and iii. clear image and resolution.

	(3)Address label	If you are sending the necessary documents after you have finished the online registration, print out an address label from the online registration website and paste it on an envelope (240 x 332 mm, also called K2 size in Japan). If you bring the documents, address labels are unnecessary. *If sending the documents from overseas, address labels are unnecessary
Other necessary documents	(4)Certificate of (Expected) Graduation	A certificate issued by the institution the applicant attended.(Original or certified copy written in either Japanese or English) <Notes> ・In case the applicant cannot submit the original copy of certificate in Japanese or English from the school due to inevitable reasons, submit a photo copy of the certificate in Japanese or English which is duly certified by the school , Embassy / Consulate, or public notaries organization. ・In case the certificate is issued only in the applicant's native language only other than English or Japanese, submit with a translation in Japanese or English which is officially certified by a public organization.
	(5)Transcripts	・Submit official transcripts in Japanese or English with the seal or signature of the authorized person of the institution. <Notes> ・The same Notes as of above (4) <Notes>.
	(6)Statement of Purpose	Write your motives and purpose for seeking admission to this Graduate School to study and conduct research. (A4size/optional format)

	(7)Research plan	Submit a research plan for the doctoral course. (A4size/optional format/approximately 1,000words)
	(8)Master's thesis and abstract	Applicants who have completed a master's degree should submit their master's thesis and abstract in approximately 2,000 words. Master's candidates should submit a progress report in approximately 2,000 words.
	(9)List of Achievements [Research results, articles, and business reports]	Utilize the format designated by Kyutech to list your academic articles, presentations, study reports, patents, qualifications, etc. If possible, attach (photocopied) offprints of your articles, or a summary of your achievements. (For the format style you may select English or Japanese.)
	(10)Copy of the passport photo page	Attach a photo copy of the passport photo page. For those who do not hold a passport and not be able to submit Copy of the passport photo page, please contact us before applying for admission and ask for alternate solution.
	(11) A copy of the residence card or special permanent resident certificate or certificate of residence	Applicants who reside in Japan must submit this document.

5. Application Period

Application must be completed by submitting all of the above-said documents between the following application submission periods.

Applying for:	Application Submission Period
October 2021	From May 19th (Wed) until May 25th (Tue), 2021
April 2022	From May 19th (Wed) until May 25th (Tue), 2021
	From October 15th (Fri) until October 21st (Thu), 2021

In order to complete the application, applicant must either send or bring the application documents during the Application Period to the following address:

Graduate School of Engineering Administrative Office
Kyushu Institute of Technology
1-1 Sensui-cho, Tobata-ku, Kitakyushu city, Fukuoka prefecture 804-8550, JAPAN
E-mail koh-daigakuin@jimu.kyutech.ac.jp

Application submission counter will be open from 9:00am until 4:00pm (Mon-Fri) for applicants bringing the application documents.

To send the application documents by post, the documents must be send by registered mail , EMS, or courier services such as Fedex, DHL, etc. any of which as tracking system, and make sure to put (write) “Application Document” in Red color on the front side of the envelope.

6. Entrance Examination and Selection

Successful applicants are selected based on the evaluation of submitted documents and the results of entrance examination such as written exam, oral exam, and interview as listed below.

Department	Subject Area (Course)		Examination
Department of Engineering	Area 1	Architecture Course	Interview
	Area 2	Civil Engineering Course	
	Area 3	Control Engineering Course	
	Area 4	Mechanical Engineering Course	
	Area 5	Mechanical and Space Systems Engineering Course	
	Area 6	Electrical and Space Systems Engineering Course	
	Area 7	Electrical Engineering Course	
	Area 8	Electronic Engineering Course	
	Area 9	Applied Chemistry Course	
	Area10	Materials Science and Engineering Course	

7. Dates and Venues of Entrance Examinations

Applying for	Date	Venue
October 2021	July 1st (Thu), 2021	Tobata Campus, Kyushu Institute of Technology
April 2022	July 1st (Thu), 2021	
	November 27th (Sat), 2021	

*Note: The exact time will be notified on website after the download date of the examination card.
(https://www.kyutech.ac.jp/examination/e-information.html).

8. Announcement of the Entrance Examination Result

Applying for	Announcement Time and Date (JST)
October 2021	10 AM, July 12th (Mon), 2021
April 2022	10 AM, July 12th (Mon), 2021
	10 AM, December 8th (Wed), 2021

*Examinee seat numbers of successful applicants will be posted on this Institute's website(http://www.kyutech.ac.jp/), and a written Notification of Acceptance will be sent by mail.

*Applicants' names in Chinese characters which are not inscribable in Japanese will be changed to comparable characters or katakana.

9. Enrollment Procedures

Enrollment procedures are planned to take place in late September for October 2021 admission and in middle of March 2022 for April 2022 admissions. The details will be informed to successful applicants.

Fees to be paid during enrollment procedures:

1. Entrance fee: ¥282,000 (tentative)
   (*Note that Japanese Government Scholarship (MEXT) Students are not required to pay the entrance fee)
2. Research Accident Insurance: ¥2,600 (tentative)
3. Support Club Fee: ¥10,000 (tentative)
4. Comprehensive Insurance for Students Lives Coupled with "Gakkensai": ¥28,780 (tentative)

〔Reference〕

Tuition fee(After admission): ¥267,900 per semester (tentative)
¥535,800 per year (tentative)

*Japanese Government Scholarship (MEXT) Students are not required to pay tuition fee.

10. Important Notice

A) Examination Card must be carried with applicants during the entrance examination.
B) Application and documents submitted are not changeable or returnable to applicants
C) Examination fee is not refundable despite of cancellation or no-show.
D) Applicants who need special care and support during the entrance examination should inform to and consult with the Administrative Office when submitting applications in order to have special assistance.
E) Search a potential supervisor who conducts research in a specific field you are interested in on the Kyutech website before applying. Contact the supervisor by e-mail to discuss opportunities for you to participate in the laboratory. In your e-mail, please include your academic backgrounds and your research topics. Before applying for admission to Kyutech, please discuss fully with the supervisor to see if your research topics correspond to the supervisory competences.
F) This English version is a translated version of original Japanese Guidelines, and if there are any discrepancies between English-translated version and Japanese original version, Japanese original version shall prevail.

11. Privacy Policy

Kyutech shall strictly abide by relevant legislation related to personal information protection and only use personal information of applicants for the following purposes.

A) Personal information shall be used for any necessary procedures of admission not limited to individual screening for qualification, online registration, entrance examination, and enrollment procedure.
B) Personal transcripts and any other academic records of applicants shall be used for appropriate study instructions to applicants after entering to Kyutech.

C) Personal transcripts and any other academic records of applicants shall be used for student support such as tuition waiver after entering to Kyutech.
D) Personal transcripts and any other academic records of applicants, after edited in format that any individual can not to be specified, used for research and study for entrance examination.

Kyutech shall not use personal information or provide it to third parties without the consent of applicants except for the cases stipulated in Article 9 of Act on the Protection of Personal Information Held by Independent Administrative Agencies.

12. Security Export Control

Kyushu Institute of Technology has established the “Kyushu Institute of Technology Security Export Control Regulations” in accordance with the “Foreign Exchange and Foreign Trade Act”, and rigorously screens potential international students on the basis of these regulations. International applicants who fall under any of the conditions set out in said regulations may be unable to enter their desired course or program.

For more details:
http://www.kyutech.ac.jp/english/admissions/security-export-control.html

13.Special Course for International Students

Kyutech has Special Course for International Students. Please check the website for details.
(https://www.tobata.kyutech.ac.jp/gr-school/gra-program/)

工学府入学者受入方針

Admissions Policy for Graduate Schools of Engineering

大学院博士前期課程アドミッションポリシー

Master's Program Admissions Policy for Kyutech Graduate Schools after Reorganization

【全学版】
【General】

九州工業大学大学院は，開学以来の理念である「技術に堪能なる士君子」の養成に基づき，高い専門性と深い学識を持ち，卓越した能力と豊かな創造性を持って，研究・開発に従事できる高度技術者を育成します。

理工学系専門分野において，独創的思考および研究開発活動を行うための高度な知識と実践的解決力の修得を目指し，これらに必要な基礎学力，専門基礎知識を修得しているとともに，国際化に対応できるコミュニケーション力，様々な文化の理解，技術が社会に果たす役割の理解， 自立性，協調性を身につけている皆さんの入学を期待します。

(1)技術者に必要な基礎学力と工学専門分野の知識を修得し，自然現象を科学的に理解できる
(2)人，社会及び文化に関して理解できる
(3)工学・技術が社会で果たす役割を理解できる
(4)背景や文脈を理解して適切に説明できる日本語能力，および外国語によるコミュニケーションの基本的能力を修得している
(5)問題解決に必要な論理的思考力，分析力，説明能力を修得している
(6)技術者としての倫理観と責任感を備え，社会に貢献する志を有する
(7)自己を律する自己管理ができ，自発的な活動ができる
(8)人々と協調でき，個人の能力も発揮できる

入学者の選抜においては，(1)，(4)及び(5)の一部については主に筆記試験と TOEIC／TOEFL スコアにより，(2)，(3)については主に成績証明書により，(5)の一部，(6)，(7)，(8)については面接試験により評価します。

なお，外国人留学生に関しては，(4)の日本語能力は日本語以外の言語（母国語など）でも可とします。

Based on the motto of the university since its foundation – to instill a deep knowledge of science and engineering in high caliber students – Kyutech Graduate Schools foster highly-skilled engineers who actively participate in research and development, with a high degree of professionalism and in-depth knowledge, outstanding abilities and high creativity.
With the aim of acquiring advanced knowledge and practical problem-solving abilities for creative thinking and research and development activities in the specialized fields of science and engineering, we seek students who, have acquired basic academic abilities that are essential for further study and basic expertise, as well as global communication skills, understanding of diverse cultures, understanding of social roles of technology, independence,

and cooperativeness.
Students should
(1) Understand natural phenomena scientifically with the acquisition of basic academic abilities that are essential for engineers and knowledge of the specialized field of engineering
(2) Understand human beings, society, and cultures
(3) Understand the roles of engineering and technology in society
(4) Have acquired Japanese language or native tongue proficiency for understanding backgrounds and context and providing explanations properly, and a basic ability to communicate in English
(5) Have acquired abilities in logical thinking, analysis, and explanation that are essential for problem-solving
(6) Have ethical standards and a sense of commitment as an engineer, and have an aim of contributing to society
(7) Have self-discipline, and carry out voluntary activities
(8) Cooperate with other individuals and make full use of individuals' capabilities
For admissions selection, We evaluate (1), (4), and part of (5) mainly by written examination and TOEIC/TOEFL scores, (2) and (3) mainly by academic transcript, and part of (5), (6), (7) and (8) by interview.

For international students, Japanese language proficiency in (4) can also be evaluated by language other than Japanese (mother tongue, etc.).

【工学府（前期）】
【Graduate School of Engineering (Master's Program)】

＜技術者及び研究者としての養成目標＞
「ものづくり」を基盤とした最先端科学技術分野において，開学以来掲げてきた「技術に堪能なる士君子」，すなわち，豊かな教養と技術者倫理ならびにコミュニケーション力を備え，科学技術の進歩に対応できる工学基礎力・専門技術力を有し，国際的に活躍できる専門技術者の素養と能力に加え，深い専門知識とそれに基づく課題発見・設定・解決能力，多様な文化の理解に基づく国際的コミュニケーション力を有するグローバル社会で活躍する高度専門技術者の養成を目指しています。

＜求める人材＞
(1)基礎学力を充分に修得し，(2)チャレンジ精神が旺盛で，果敢に新たな課題を求め，その解決に取り組もうとする前向きな姿勢を持ち，(3)グローバルな視点で物事を考えることができる人材を求めます。

＜一般選抜（推薦型・一般型）で受け入れる人材＞
(1)技術者に必要な基礎学力と工学専門分野の知識を修得し，自然現象を科学的に理解でき，(2)外国語によるコミュニケーションのための基本的能力を修得し，(3)問題解決に必要な論理的思考力，分析力，説明能力を修得している人材を受け入れます。

＜社会人特別選抜で受け入れる人材＞
(1)社会人技術者，研究者等が在職のまま修学し，大学と社会との交流を深め，学問と技術の発展に寄与することを目的とし，(2)技術者に必要な基礎学力と工学専門分野の知識を修得し，自然

現象を科学的に理解でき，(3)外国語によるコミュニケーションのための基本的能力を修得し，(4)問題解決に必要な論理的思考力，分析力，説明能力を修得している人材を受け入れます。

＜外国人留学生特別選抜で受け入れる人材＞
(1)技術者に必要な基礎学力と工学専門分野の知識を修得し，自然現象を科学的に理解でき，(2)問題解決に必要な論理的思考力，分析力，説明能力を修得している人材を受け入れます。

＜入学者選抜の基本方針＞
一般選抜（推薦型）
(1)の一部、(3)については主に学力検査（筆記・面接試験等）により、(2)についてはTOEIC/TOEFL のスコアにより、(1)の一部については主に書類審査により評価します。
一般選抜（一般型）
(1)の一部、(3)については主に学力検査（筆記及び面接試験）により、(2)についてはTOEIC/TOEFL のスコアにより、(1)の一部については主に書類審査により評価します。
社会人特別選抜
(1)、(2)、(4)については書類審査及び面接試験により、(3)については面接試験により評価します。
外国人留学生特別選抜
(1)、(2)について、学力検査（筆記・面接試験等）及び書類審査により評価します。

＜Engineer and Researcher Development Objective＞
Our objective is to foster － to instill a deep knowledge of science and engineering in high caliber students – the motto of the university since its foundation, in the fields of the most-advanced science and technology based on “Monozukuri (creative engineering),” in other words we aim to educate highly-specialized engineers who will play an active role in global society, provided with a depth and breadth of education, ethics for engineers, and communication skills, having basic engineering skills and specialized technological skills to keep pace with advances in science and technology, in addition to accomplishments and capabilities as an internationally-active professional engineer, having in-depth expertise and abilities to find, set, and solve problems, and global communication skills based on understanding of diverse cultures.

＜Students we seek＞
We seek talented persons who: (1) have sufficiently acquired basic academic abilities, (2) have a positive attitude to address and solve new challenges energetically, and (3) have global perspective.

＜Students accepted by general admissions selection＞
We accept talented persons who: (1) have acquired basic academic abilities and knowledge of the specialized field of engineering essential for engineers, and can understand natural phenomena scientifically, (2) have acquired a basic ability to communicate in English, and (3) have acquired abilities in logical thinking, analysis, and explanation essential for problem-solving.

＜Students accepted by special admissions selection for working people＞
We accept talented persons who: (1) aim to study as engineers, researchers, etc., while working, deepen relationships between the university and society, and make a contribution to

development in academics and technology, (2) have acquired basic academic abilities and knowledge of the specialized field of engineering essential for engineers, and can understand natural phenomena scientifically, (3) have acquired a basic ability to communicate in English, and (4) have acquired abilities in logical thinking, analysis, and explanation essential for problem-solving.

＜Students accepted by special admissions selection for international students＞
We accept talented persons who: (1) have acquired basic academic abilities and knowledge of their specialized field of engineering essential for engineers, and can understand natural phenomena scientifically, and (2) have acquired abilities in logical thinking, analysis, and explanation essential for problem-solving.

＜Basic Policy for Admission Selection＞
General Admissions Selection (Recommendation-Based)
For admissions selection, We evaluate (3) and part of (1) mainly by academic ability test (written / interview, etc.), and (2) by TOEIC / TOEFL score, and part of (1) mainly by document screening.

General Admissions Selection
For admissions selection, We evaluate (3) and part of (1) mainly by academic ability test (written / interview), and (2) by TOEIC / TOEFL score, and part of (1) mainly by document screening.

Special Admissions Selection for Working People
For admissions selection, We evaluate (1), (2) and (4) by document screening and interview, and (3) by interview.

Special Admissions Selection for International Students
For admissions selection, We evaluate (1) and (2) by academic ability test (written / interview, etc.) and document screening.

大学院博士後期課程アドミッションポリシー

Doctoral Program Admissions Policy for Kyutech Graduate Schools after Reorganization

【全学版】
【General】

九州工業大学大学院は，開学以来の理念である「技術に堪能なる士君子」の養成に基づき，高い専門性と深い学識を持ち，卓越した能力と豊かな創造性を持って，研究・開発に従事できる高度技術者を育成します。

理工学系専門分野において，最先端の知識と研究開発能力，および他分野と接する境界領域の知識の修得を目指し，これらに必要な専門分野の高度な知識を修得しているとともに，プレゼンテーション力，外国語によるコミュニケーション力，社会に果たす役割の理解，自立性，チームワーク力を身につけている皆さんの入学を期待します。

(1)技術者としての独創的思考および研究開発活動を行うための工学専門分野における高度な知識を修得している
(2)各専門分野が社会で果たす役割を理解できる
(3)研究開発に必要な問題解決能力を実践的な高度技能として修得している
(4)新技術等を提案・公表するために必要なプレゼンテーション能力を修得している
(5)外国語によるコミュニケーション能力を身に付けている
(6)自己の役割の認識を深める態度を有している
(7)未知の専門的課題に対して，その解決に向けた計画立案と作業の管理ができる
(8)チームの一員としてチーム活動の改善を提案することができる

入学者の選抜においては，上記について，研究報告，研究計画，面接試験，成績証明書により評価します。

Based on the motto of the university since its foundation – to instill a deep knowledge of science and engineering in high caliber students – Kyutech Graduate Schools foster highly-skilled engineers who actively participate research and development, with a high degree of professionalism and in-depth knowledge, outstanding abilities and high creativity.

With the aim of acquiring state-of-the-art knowledge and research and development capabilities and also knowledge of boundary areas bordering on other fields in the specialized fields of science and engineering, we seek students who, have acquired advanced knowledge in the specialized fields, that are essential, and also presentation skills, communication skills in English, understanding of roles in society, independence, and teamwork skills.

Students should
(1) Have acquired advanced knowledge in specialized fields of engineering for creative thinking and research and development activities as an engineer
(2) Understand the roles of the specialized fields in society
(3) Have acquired problem-solving skills that are essential for research and development as high levels of practical abilities
(4) Have acquired presentation skills that are essential for proposal and announcements of new technologies, etc.
(5) Have learned communication skills in English
(6) Have an attitude toward deepening the awareness of their own roles
(7) Make plans and manage work for solving unknown specialized challenges
(8) Suggest improvements of group activities as a team member

For admissions selection, evaluations are made by research paper, research proposal, interview, and academic transcript.

【工学府（後期）】
【Graduate School of Engineering (Doctoral Program)】

＜技術者及び研究者としての養成目標＞
「ものづくり」を基盤とした最先端科学技術分野における高度な知識を有し，その科学技術社会への波及効果を十分に理解していることに加え，複数の専門分野の知識を身に付け，問題解決能力，独創力，創造性及び実践的技術者としての必要な資質を持ち，イノベーションを創出できる能力を有する人材の養成を目標としています。
さらに，グローバル化する社会の中で，異文化を理解し多文化環境下で新しい価値を生み出す能力を持ち，かつ，リーダーシップを発揮できる人材の育成も目指しています。

＜求める人材＞
(1)技術者としての独創的思考及び研究開発活動を行うための工学専門分野における高度な知識を修得し，(2)新技術等を提案・公表するために必要なプレゼンテーション能力を修得し，(3)グローバル社会においてコミュニケーション能力を発揮できる人材を求めます。

＜一般選抜で受け入れる人材＞
(1)研究開発に必要な問題解決能力を実践的な高度技能として修得し，(2)外国語によるコミュニケーション能力を身に付け，新技術等を提案・公表するために必要なプレゼンテーション能力を修得し，(3)未知の専門的課題に対して，その解決に向けた計画立案と作業の管理能力を習得している人材を求めます。

＜社会人特別選抜で受け入れる人材＞
(1)社会人技術者，研究者等で，在職のまま修学し，大学と社会との交流を深め，学問と技術の発展に寄与することを目的とし，(2)研究開発に必要な問題解決能力を実践的な高度技能として修得し，(3)外国語によるコミュニケーション能力を身に付け，新技術等を提案・公表するために必要なプレゼンテーション能力を修得し，(4)未知の専門的課題に対して，その解決に向けた計画立案と作業の管理能力を習得している人材を求めます。
＜外国人留学生特別選抜で受け入れる人材＞
(1)研究開発に必要な問題解決能力を実践的な高度技能として修得し，(2)未知の専門的課題に対して，その解決に向けた計画立案と作業の管理能力を習得している人材を受け入れます。

＜入学者選抜の基本方針＞
一般選抜
(1),(2),(3)について、書類審査及び面接試験により評価します。
社会人特別選抜
(1)、(2)、(3)、(4)について、書類審査及び面接試験により評価します。
外国人留学生特別選抜
(1)、(2)について、書類審査及び面接試験により評価します。

＜Engineer and Researcher Development Objective＞
Our objective is to foster talented persons who have skills to innovate, being qualified as a practical engineer with problem-solving skills, originality, and creativity, having acquired knowledge in multiple fields of specialization, in addition to advanced knowledge in the most-advanced fields of science and technology based on “Monozukuri (creative engineering)” and understanding of ripple effects in the world of science and technology.
Furthermore, we also aim to foster talented persons who understand different cultures in a globalized society, have skills to create new value under a multicultural environment, and can

exercise leadership.

＜Students we seek＞
We seek talented persons who: (1) have acquired advanced knowledge in specialized fields of engineering for creative thinking and research and development activities as an engineer, (2) have acquired presentation skills that are essential for proposal and announcements of new technologies, etc., and (3) can exercise communication skills in a global society.

＜Students accepted by general admissions selection＞
We accept talented persons who: (1) have acquired problem-solving skills that are essential for research and development as high levels of practical abilities, (2) have learned communication skills in English, and acquired presentation skills that are essential for proposal and announcements of new technologies, etc., and (3) have acquired skills to and manage work for solving unknown specialized challenges.

＜Students accepted by special admissions selection for working people＞
We accept talented persons who: (1) aim to study as engineers, researchers, etc., while working, deepen relationships between the university and society, and make a contribution to academic and technological development, (2) have acquired problem-solving skills that are essential for research and development as high levels of practical abilities, (3) have learned communication skills in English, and acquired presentation skills that are essential for proposal and announcements of new technologies, etc., and (4) have acquired skills to plan and manage work for solving unknown specialized challenges.

＜Students accepted by special admissions selection for international students＞
We accept talented persons who: (1) have acquired problem-solving skills that are essential for research and development as high levels of practical abilities, and (2) have acquired skills to plan and manage work for solving unknown specialized challenges.

＜Basic Policy for Admission Selection＞
General Admissions Selection
For admissions selection, We evaluate (1), (2) and (3) by document screening and interview.

Special Admissions Selection for Working People
For admissions selection, We evaluate (1), (2), (3) and (4) by document screening and interview.

Special Admissions Selection for International Students
For admissions selection, We evaluate (1) and (2) by document screening and interview.

大学院工学府の概要

Overview of Graduate School of Engineering

Ⅰ．博士前期課程　＜Master's　Programs＞

【博士前期課程の改組について】

工学府では、平成３１年４月に、下記のとおり工学府博士前期課程全専攻の改組を実施した。

（改組前）旧専攻	（改組後）新専攻
専攻名	専攻名
機械知能工学専攻	**工学専攻** ・建築学コース ・国土デザインコース ・知能制御工学コース ・機械工学コース ・機械宇宙システム工学コース ・電気宇宙システム工学コース ・電気エネルギー工学コース ・電子システム工学コース ・応用化学コース ・マテリアル工学コース
建設社会工学専攻	
電気電子工学専攻	
物質工学専攻	
先端機能システム工学専攻	

工学専攻　＜Department of Engineering＞

工学専攻は，「ものづくり」を基盤とした最先端科学技術分野において，開学以来掲げてきた「技術に堪能なる士君子」，すなわち，豊かな教養と技術者倫理ならびにコミュニケーション力を備え，科学技術の進歩に対応できる工学基礎力・専門技術力を有し，国際的に活躍できる専門技術者の素養と能力に加え，深い専門知識とそれに基づく課題発見・設定・解決能力，多様な文化の理解に基づく国際的コミュニケーション力を有するグローバル社会で活躍する高度専門技術者を養成する。

The Graduate School of Engineering aims to fosters － to instill a deep knowledge of science and engineering in high caliber students – the motto of the university since its foundation, in the fields of the most-advanced science and technology based on "Monozukuri (creative engineering)," in other words we educate highly-specialized engineers who will play an active role in global society, provided with a depth and breadth of education, ethics for engineers, and communication skills, having basic engineering skills and specialized technological skills to keep pace with advances in science and technology, in addition to accomplishments and capabilities as an internationally-active professional engineer, having in-depth expertise and abilities to find, set, and solve problems, and global communication skills based on understanding of diverse cultures.

1. 建築学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
建築学コース Architecture Course	心豊かな生活空間を創造するための建築・都市空間に対する計画やデザイン，および安全で快適な建築物を実現するための構造設計，建築環境，建築施工などの技術について教育研究を行う。 This course conducts education and researches on architectural planning and design of buildings or urban areas, in which affluent human living spaces are created. In addition, education and research about the architectural technology of structural design, environmental design or constructions, etc. by which buildings supporting safe and comfortable living are realized, are also conducted.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
徳田　光弘 TOKUDA　Mitsuhiro	建築計画・建築設計　地域デザイン　まちづくり リノベーション　建築・不動産事業デザイン ものづくり　災害復興デザイン Architectural Planning & Design, Regional Design, Town Management, Renovation, Architecture & Real Estate Business Design, Manufacturing, Reconstruction Design	建築学特論 Advanced Architecture and Architectural Engineering 建築計画特論 Advanced Architectural Planning
陳　沛山 CHEN　Pei-Shan	建築構造　超高層構造・大空間構造（シェル，膜，ケーブル，スペースフレーム等）　非線形構造解析 構造形態解析　最新構造システムの創出 S-Art 設計理念　古建築構造 Architectural Structure, High-rise Structures and Spatial Structures (Shells, Membranes, Cables, Space frames, etc.), Nonlinear Structural Analysis, Form-finding, New Structure System, Structure-Art (S-Art), Ancient Structures	建築学特論 Advanced Architecture and Architectural Engineering 建築構造特論 Advanced Architectural Structure
趙　旺熙 CHO　Wanghee	建築環境・建築設備　Zero Energy Building(ZEB)/Zero Energy House(ZEH)のための省エネ技術開発 快適性および生産性の向上　エネルギーグリッド 潜・顕熱分離空調(デシカント空調)　結露リスク評価 Architectural Environment & Building Equipment, Development of Energy-conservation Technology for Zero Energy Building (ZEB) / Zero Energy House (ZEH), Improvement of Thermal Comfort and Productivity, Energy Grid,Dedicated Outdoor Air System (Desiccant Air-conditioning system), Condensation risk assessment	建築学特論 Advanced Architecture and Architectural Engineering 建築環境特論 Advanced Architectural Environment Design

2. 国土デザインコース

国土デザイン コース Civil Engineering Course	「社会基盤施設に関するもの創りをベースとして，都市の再生，さらには都市の持続や自然災害に対する防災システムなど，都市の安全・安心に関わる技術」と「調和の取れた環境デザインを目標として，日常生活における環境問題を克服し，次世代に安全で潤いのある生活空間を提供するための技術」について教育研究を行う。 This course conducts education and researches on “Civil Engineering Technology of social infrastructure facilities which covers urban regeneration, sustainability and disaster prevention system” and “Environmental Design that takes into account the development, conservation and regeneration of cities and regions to provide the next generation with a safe, secure and sustainable society”.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
伊東　啓太郎 ITO　Keitaro	エコロジカル・デザイン　ランドスケープ・デザイン 緑地設計　都市生態学　自然環境保全　景観生態学 Ecological Design,Landscape Design, Green Space Planning, Urban Ecology, Preserving Natural Environment, Landscape Ecology	環境保全と生態工学 Environmental Preservation and Ecological Engineering
鬼束　幸樹 ONITSUKA　Kouki	静水圧　管路流　開水路流 Hydrostatic Pressure Distribution, Duct Flow, Open-Channel Flow	水工学特論 Advanced Hydraulics
合田　寛基 GODA　Hiroki	コンクリート工学　橋梁工学　ジオポリマー　材料劣化 光学的非接触全視野計測 Concrete Engineering, Bridge Engineering, Geopolymer, Material Deterioration, Optical Noncontact Full-Field Measurement	コンクリート工学特論 Advanced Concrete Engineering
重枝　未玲 SHIGE-EDA　Mirei	水工水理学　数値流体力学　河川工学 ダム・湖沼工学　　氾濫の水理 Hydraulic Engineering, Computational Fluid Dynamics, River Engineering, Reservoir Sedimentation, Flood Inundation Modeling	数値水理学 Computational Hydraulics 河川工学特論 Advanced River Engineering
寺町　賢一 TERAMACHI　Kenichi	交通計画　バリアフリー　生活交通　都市防犯 防災避難計画 Transportation Planning, Barrier Free, Local Transportation, Crime Prevention, Evacuation Planning	バリアフリー交通論 Barrier Free Traffic
日比野　誠 HIBINO　Makoto	建設材料学　施工 電気化学的防食工法 Construction Materials, Construction Works, Electrochemical Corrosion Control,	建設材料学 Construction Materials
廣岡　明彦 HIROOKA　Akihiko	地盤工学　地盤環境工学　地盤防災　構造物基礎 廃棄物処理 Geotechnical Engineering, Geoenvironmental Engineering, Ground Disaster Prevention Engineering, Foundation Engineering, Waste Treatment	地盤工学特論Ⅰ，Ⅱ Advanced Geotechnical Engineering Ⅰ，Ⅱ

松田　一俊 MATSUDA　Kazutoshi	風工学　構造振動学　構造力学　橋梁工学 メンテナンス工学 Wind Engineering, Structural Dynamics, Structural Mechanics, Bridge Engineering, Infrastructure Maintenance Engineering	構造動力学特論 Advanced Structural Dynamics
山口　栄輝 YAMAGUCHI　Eiki	構造力学　鋼構造　橋梁工学　応用力学 メンテナンス工学 Structural Mechanics, Steel Structures, Bridge Engineering, Applied Mechanics, Maintenance Engineering	構造解析学特論 Advanced Structural Analysis 材料力学特論 Advanced Mechanics of Materials
吉武　哲信 YOSHITAKE Tetsunobu	土地利用マネジメント　社会的合意形成マネジメント 過疎地域の移動サービス　地域づくり Land Use Management, Consensus Building Management, Transportation System in Underpopulated Areas, Community Vitalization	道路交通環境 Road Traffic and Environment 国土デザインと景観工学 Landscape Design and Planning

3. 知能制御工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
知能制御工学 コース Control Engineering Course	種々の動的な装置には，高性能化，小型化，高知能化技術，あるいは人間に優しいなどの特性が要求される。本コースではこのような要求にこたえるために，制御工学，知能工学，計測工学，電気工学および機械工学などからなるメカトロニクスを中心とした教育研究を行う。 Various machines are commonly expected to be designed to possess state-of-the-art technologies such as higher performance, smaller size, artificial intelligence technologies, and even human-friendly features. This course provides students with a graduate program focused on mechatronics, which encompasses control engineering, artificial intelligence, instrumentation engineering, electrical engineering, and mechanical engineering.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
猪平　栄一 INOHIRA　Eiichi	サービスロボット　支援ロボット ソフトウェアフレームワーク　機械学習 Service Robots, Assistive Robots, Software Framework, Machine Learning	強化学習持論 Reinforcement Learning
大屋　勝敬 OYA　Masahiro	車の操縦安定化　移動ロボット パワーアシストロボット　ロバスト制御理論 Steering Control of Vehicle, Mobile Robot, Power Assist Robot, Robust Control	自動運転車両特論 Advanced Autonomous Vehicle 制御系構成特論 Advanced Control Systems Design
神谷　亨 KAMIYA　Tohru	コンピュータ画像診断支援　経時差分処理 パターン認識　医用画像処理 Computer Aided Diagnosis, Temporal Subtraction, Pattern Recognition, Medical Image Processing	知的システム構成特論 Advanced Intelligent System
黒木　秀一 KUROGI　Shuichi	ニューラルネットワーク　画像処理　音声処理 予測制御　ロボットの画像計測と制御 Neural Network, Image Processing, Speech Processing, Predictive Control, Image Sensing and Control of Robots	知能システム学特論 Advanced Theory and Applications for Intelligent Systems
坂井　伸朗 SAKAI　Nobuo	ロボティクス　医用・福祉工学　バイオメカニクス 設計工学　トライボロジ Robotics, Biomedical Engineering, Biomechanics, Mechanical Design Engineering, Tribology	生体機能設計学特論 Advanced Bionic Design
相良　慎一 SAGARA　Shinichi	水中ロボット　宇宙ロボット　マニピュレータ ディジタル制御 Underwater Robot, Space Robot, Manipulator, Digital Control	ロボティクス特論 Advanced Robotics 制御システム特論 Advanced Control Systems Theory

タン　ジュークイ TAN　Joo Kooi	マイビジョン（人の第 3 の目）　3 次元復元　知的映像認識 人の挙動解析　機械学習　知能ロボット MY VISION, 3D Recovery, Intelligent video Recognition Human Motion Analysis, Machine Learning,, Intelligent Robot	視覚情報解析特論 Advanced Visual Information Analysis
陸　慧敏 LU　Huimin	人工知能　産業用ロボット　ロボットビジョン Artificial Intelligence, Industrial Robots, Robotic Vision	確率システム制御特論 Advanced Probabilistic System Control

4. 機械工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
機械工学 コース Mechanical Engineering Course	今後も新しい「ものづくり」の中心的役割を担うのが機械工学である。本コースでは，機械宇宙システム工学コースと連携して，１)材料に要求される様々な機能・強度を実現するための各種新素材や機能材料の力学的挙動の解明と機能発現・強度評価，２)機械や装置の生産に関係する加工現象解析，加工装置の性能向上，設計から生産に至る情報処理やそれを統合するシステム技術，３)熱流体エネルギーの変換と高効率利用，熱流体・粒子間の力学的相互作用によって発生する諸現象の解明と応用を核とした教育研究を行い，幅広い視野を持つエンジニアを養成する。 Mechanical engineering plays a central role in new products manufacturing (*"Monozukuri"*) at all times. This mechanical engineering course is performed in collaboration with the mechanical and space systems engineering course. The education and research provided in the course aims at training engineers with broad horizons based on the following: 1) Study of mechanical behavior of advanced materials and functional materials so as to choose the most adequate material with regards to customer's requirements, such as functionality and strength. 2) Study of production process analysis of machines and products, high performance of manufacturing equipment, and information and its integrated system technology from design to production. 3) Study of energy conversion of heat transfer, fluid dynamics, and high performance systems, as well as the study of mechanical interaction phenomena between particles.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
梅景　俊彦 UMEKAGE　Toshihiko	粒子複雑系　混相流体力学　粉体力学 Particle Complex System, Multi-Phase Hydrodynamics, Statics and Dynamics of Granular Materials	粉体工学特論 Advanced Powder Technology
河部　徹 KAWABE　Toru	塑性加工　プレス加工　鍛造 塑性変形に関するコンピュータシミュレーション Metal Working, Press Forming, Forging, Numerical Simulation for Plastic Deformation	応用構造解析特論 Advanced Structural Analysis

吉川　浩一 KIKKAWA　Koichi	生産の高度自動化技術　高精度加工法の開発　CAD/CAM Production Engineering, High Precision Manufacturing, CAD/CAM	生産情報処理学特論 Advanced Production Information Processing Technology
黒島　義人 KUROSHIMA　Yoshihito	材料強度　金属疲労　実験力学　超高サイクル疲労 Fracture and Strength of Materials, Fatigue, Experimental Mechanics, Very High Cycle Fatigue	材料強度学特論 Advanced Fracture and Strength of Materials
清水　浩貴 SHIMIZU　Hiroki	精密計測　精密位置決め　機械計測　光応用 Precision Measurement, Precision Positioning, Mechanical Measurement, Applied Optics	計測工学特論 Advanced Measurement Engineering
坪井　伸幸 TSUBOI　Nobuyuki	圧縮性流体力学　粘性流体力学　希薄気体力学 数値流体力学　化学反応　燃焼　航空・宇宙用推進 Compressible Fluid Dynamics, Viscous Fluid Dynamics, Rarefied Gas Dynamics, Computational Fluid Dynamics, Chemical Reaction, Combustion, Propulsion for Aircraft and Space Vehicle	数値流体力学特論 Computational Fluid Dynamics 高速気体力学特論 High-Speed Gas Dynamics
永岡　健司 NAGAOKA　Kenji	宇宙ロボティクス・メカトロニクス　惑星探査ロボット 軌道上サービスロボット　極限探査技術 Space Robotics and Mechatronics, Planetary Exploration Robot, On-Orbit Servicing Robot, Extreme Exploration Technology	宇宙ロボティクス特論 Advanced Space Robotics
長山　暁子 NAGAYAMA　Gyoko	熱工学　ナノ・マイクロ伝熱　分子動力学解析 界面現象　燃料電池 Thermal Science and Engineering, Nano/Microscale Heat Transfer, Molecular Dynamics Simulation, Interface Phenomena, Fuel Cell	応用熱事象学特論 Advanced Thermal Science and Engineering
松田　健次 MATSUDA　Kenji	トライボロジー　コーティング　硬さ試験　摩擦　寿命 Tribology, Coating, Hardness Test, Friction, Life	機能表面工学特論 Advanced Functional Surface Engineering
宮崎　康次 MIYAZAKI　Koji	熱工学　熱物性　熱伝導　熱ふく射　ナノ・マイクロ伝熱 Thermal Engineering, Thermophysical Properties, Heat Conduction, Thermal Radiation, Nano/Microscale Heat Transfer	エネルギー変換特論 Advanced Energy Conversion
森　直樹 MORI　Naoki	生産工学　機械工作　マイクロ成形 プラスチック成形加工　複合材料 Production Engineering, Machining, Micro Molding Polymer Processing, Polymer Based Composites	
矢吹　智英 YABUKI　Tomohide	熱工学　ナノ・マイクロ伝熱　沸騰熱伝達　MEMS 熱計測 Thermal Engineering, Nano/Microscale Heat Transfer, Boiling Heat Transfer, MEMS Thermal Measurement	熱流体力学特論 Advanced Thermal and Fluid Transport Phenomena
鎌田　裕之 KAMADA　Hiroyuki	少数粒子系物理学　原子核理論　量子力学的散乱問題 相対性理論　カイラル摂動理論 Few-Body Systems, Theoretical Nuclear Physics, Scattering Problem in Quantum dynamics, Relativity, Chiral Perturbation Theory	量子力学特論 Advanced Quantum Mechanics
鈴木　智成 SUZUKI　Tomonari	非線形解析学　凸解析学　集合値解析　不動点 非拡大半群 Nonlinear Analysis, Convex Analysis, Set-Valued Analysis, Fixed Point, Nonexpansive Semigroup	非線形解析学特論 Advanced Nonlinear Analysis

野田　尚廣 NODA　Takahiro	微分方程式の幾何学　微分式系　リー代数 微分方程式の対称性　幾何学的不変量 Geometry of Differential Equations, Exterior Differential Systems,Lie Algebras, Symmetries of Differential Equations, Geometric Invariants	応用幾何学特論 Applied Geometric Theory
若狭　徹 WAKASA　Tohru	反応拡散系　非線形偏微分方程式 分岐構造とダイナミクス　微分方程式論 非線形解析学　現象数理 Reaction Diffusion Systems, Nonlinear Partial Differential Equations, Bifurcation Structure and Dynamics, Differential Equations, Nonlinear Analysis, Mathematical Modeling	応用解析特論 Advanced Applied Analysis

5. 機械宇宙システム工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
機械宇宙 システム工学 コース Mechanical and Space Systems Engineering Course	宇宙システムに代表される複雑な工学システムを，機械工学を軸として構築できる素養を身につけるために，基礎となる機械工学の知識をシステム工学・プロジェクト管理の観点で組み合わせることで，宇宙システムに関する種々の技術課題について教育研究を行う。 This course offers education and researches on various technical issues related to space systems, aiming to train a mechanical engineer to be able to establish complex system represented by a space system, through the perspectives of system engineering and project management.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
赤星　保浩 AKAHOSHI　Yasuhiro	宇宙ごみ　超高速衝突　二段式軽ガス銃 Orbital Debris, Hypervelocity Impact, Two-Stage Light Gas Gun	高速衝突工学特論 Advanced High Velocity Impact Engineering
平木　講儒 HIRAKI　Koju	火星大気飛行システム　大気突入カプセル パラグライダ式ドローン Martian Atmospheric Flight System, Atmospheric Entry Capsule, Drone with a Paraglider	スペースダイナミクス特論 Advanced Space Dynamics
岩田　稔 IWATA　Minoru	宇宙環境　劣化　熱制御　熱物性　機能性材料　材料物性 Space Environments, Degradation, Thermal Control, Thermophysical Properties, Functional Materials, Materials Properties	宇宙材料劣化特論 Materials Degradation in Space Environments
北川　幸樹 KITAGAWA　Koki	ハイブリッドロケット推進　固体ロケット推進 レーザ点火　ロケットシステム　燃焼　伝熱 Hybrid Rocket Propulsion, Solid Rocket Propulsion, Laser Ignition, Rocket System, Combustion, Heat Transfer	ロケット推進工学特論 Advanced Rocket Propulsion Engineering

6. 電気宇宙システム工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
電気宇宙 システム工学 コース Electrical and Space Systems Engineering Course	宇宙システムに代表される複雑な工学システムを，電気工学を軸として構築できる素養を身につけるために，基礎となる電気工学の知識をシステム工学・プロジェクト管理の観点で組み合わせることで，宇宙システムに関する種々の技術課題について教育研究を行う。 This course offers education and researches on various technical issues related to space systems, aiming to train an electrical engineer to be able to establish complex system represented by a space system, through the perspectives of system engineering and project management.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
浅海　賢一 ASAMI　Kenichi	衛星データ利用　自律システム応用 画像計測　画像センシング　組み込みシステム Satellite Data Utilization, Autonomous Systems Application, Image Measurement, Image Sensing, Embedded Computing	組み込みシステム特論 Advanced Embedded Systems
趙　孟佑 CHO　Mengu	超小型衛星、宇宙システム　宇宙環境、宇宙利用 Lean Satellite Space Systems Space Environment Space Utilization	衛星工学入門 Introduction to Satellite Engineering 宇宙環境試験 Space Environment Testing
北村　健太郎 KITAMURA Kentarou	宇宙環境計測　超小型衛星　宇宙天気 Space Environment Measurement Microsatellite Space Weather	宇宙環境科学特論 Advanced Space Environment　Science
豊田　和弘 TOYODA　Kazuhiro	耐宇宙環境技術　宇宙機の帯放電現象　地上試験法 Space Environment Technology, Spacecraft Charging and Discharging, Spacecraft Ground Testing	エネルギー工学特論 Energy Conversion and Plasma Physics
花沢　明俊 HANAZAWA　Akitoshi	視覚認知　視覚モデル　画像認識　機械学習　並列計算 宇宙通信 Visual Perception, Vision Modeling, Pattern Recognition, Machine Learning, Parallel Processing, Space Communications	視覚画像認識特論 Vision and Image Recognition

7. 電気エネルギー工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
電気エネルギー工学コース Electrical Engineering Course	巨大エネルギーシステムから分散型電源・自動車・宇宙に至るまで，これからの環境調和高度エネルギー社会をインフラとして支える電気エネルギーの発生・輸送・消費・貯蔵，および超高速･超高密度情報記録，高出力素子から固体照明まで，次世代の電子デバイスと，半導体を柱にしたデバイス材料の開発と応用，デバイス化プロセス，新機能デバイスの開発に関する様々な技術課題について教育研究を行う。 The course provides the highest level engineering education and research projects based on the multi-disciplinary approach over the electric energy management technology and electronic device technology toward future green society, covering a variety of industry segments including, power electronics, large scale energy system, decentralized power source, automotive and spacecraft. The course addresses innovative technological issues related to material, design, production process, assembling and applications of electronic devices together with generation, transport, consumption and storage of electric energy.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
安部　征哉 ABE　Seiya	スイッチング電源　パワーエレクトロニクス　電気・電子回路　制御工学 Switch Mode Power Supply, Power Electronics, Electric and Electronic Circuit, Control engineering	スイッチング電源特論 Advanced Switch Mode Power Supply
和泉　亮 IZUMI　Akira	半導体プロセス　薄膜堆積　表面洗浄 Semiconductor Processing, Thin Film Deposition, Surface Cleaning	集積回路プロセス特論 Advanced Integrated Circuits Fabrication
大塚　信也 OHTSUKA　Shinya	電力・高電圧工学　部分放電　先端計測・診断 データ解析　航空機耐雷・複合材　環境低負荷 安全安心技術 Electric Power and High Voltage Engineering, Partial discharge, Advanced Measurement and Diagnostic Technologies, Data Analysis, Lightning Protection of Airplane & Composite Material, Environmental-Friendly　Technologies & EMC, Safety Issues and Security	電力システム制御解析特論 Advanced Electric Power System Control and Analysis

小迫　雅裕 KOZAKO　Masahiro	誘電・絶縁材料工学　ナノ材料　機能性材料 高電圧・絶縁工学　絶縁診断 Dielectrics and Electrical Insulation, Nano-materials, Functional Materials, High Voltage and Insulation Engineering, Insulation Diagnosis	誘電体工学特論 Advanced Dielectric Engineering
白土　竜一 SHIRATSUCHI Ryuichi	色素増感太陽電池　透明導電膜　光触媒 Dye-sensitized Solar Cells, Transparent Conducting Films, Photocatalysis	電気材料特論 Advanced Electrical Materials
内藤　正路 NAITOH　Masamichi	表面構造解析　半導体デバイス　グラフェン カーボンナノチューブ　ナノ材料 Surface Structure Analysis, Semiconductor Devices, Graphene, Carbon Nanotube, Nano Materials	薄膜デバイス特論 Fundamentals of Thin-Film Devices and Processing
長谷川　一徳 HASEGAWA Kazunori	パワーエレクトロニクス　電力応用　受動素子 パワー半導体　信頼性 Power Electronics, Electric Power Applications, Passive Components, Power Semiconductors, Reliability	電気エネルギー変換工学 Electric Energy Conversion Technology
松平　和之 MATSUHIRA Kazuyuki	強相関電子系　交差相関物性 フラストレート系磁性体 Strongly Correlated Electron Systems, Cross-Correlated Materials, Frustrated Magnets	電子物性基礎論 Fundamentals of Solid State Physics
松本　聡 MATSUMOTO　Satoshi	エネルギーハーベスティング　パワーIC 集積システム　省電力半導体デバイス・回路 Energy Harvesting, Power ICs, Integrated System, Energy Efficient Semiconductor Devices･Circuits	集積回路デバイス特論 Advanced Integrated Circuit
三谷　康範 MITANI　Yasunori	電力系統　安定化制御　省エネルギー　自然エネルギー Power System, Stabilizing Control, Energy Savings, Renewable Energy	電力機器基礎特論 Advanced Electric Power Machine
渡邊　政幸 WATANABE Masayuki	電力系統　動特性解析　系統安定化制御 Power System,　Power System Dynamics Analysis, Power System Control	電力制御特論 Advanced Power Control
大門　秀朗 OKADO　Hideaki	走査トンネル顕微鏡　表面・界面物性　ナノ材料 透過電子顕微鏡　原子・電子構造 Scanning Tunneling Microscopy, Surface and Interface Properties, Nano Materials, Transmission Electron Microscopy, Atomic and Electronic Structures	メゾスコピック系物理学特論 Mesoscopic Physics
小森　望充 KOMORI　Mochimitsu	超電導応用　磁気浮上　超環境メカトロニクス 電磁力応用 Applied Superconductivity, Magnetic Levitation, Super Mechatronics, Applied Electromagnetics	メカトロニクス特論 Advanced Mechatronics
竹澤　昌晃 TAKEZAWA　Masaaki	磁気応用　磁区観察　永久磁石　電磁鋼板　微細加工 Magnetic Application, Magnetic Domain Observation, Permanent Magnet, Si-Fe Electrical Sheet, Microfabrication	磁気工学特論 Magnetic Engineering
中尾　基 NAKAO　Motoi	半導体　SOI　電子デバイス　光デバイス 光電子集積回路 Semiconductor, SOI, Electron Device, Optical Device, Electron-photon Merged Device	半導体薄膜電子デバイス特論 Semiconductor Thin-film Devices

小田　勝 ODA　Masaru	光物性物理　光機能性材料　半導体量子ドット 有機ナノ構造　　有機無機複合材料　顕微・超高速分光 Solid State Photophysics, Optical Functional Materials, Semiconductor Quantum Dots, Organic Nanostructures, Organic-Inorganic Hybrid Materials, Ultrafast / Microscopic Spectroscopy	ナノ構造光物性特論 Photophysics of Nanostructures

8. 電子システム工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
電子システム 工学コース Electronic Engineering Course	ディジタルテレビ，携帯電話，自動車の電子制御ユニットなど，マイクロプロセッサを組み込んだ高度な電子システム製品が多くなっている。 本コースでは，アナログ・ディジタル回路，プログラミングなどの基礎技術から，センシング・制御技術，画像・音声信号処理技術，通信・ネットワーク技術などのシステム要素技術，およびこれらを統合するシステム化技術についての教育研究を行う。 All around us, there are various products using microcomputers such as a digital televisions, mobile phones, and automobile electrical control units; the number of these systems increases day by day. The Electrical Engineering course offers an education concerning basic technologies such as an analog circuit, a digital circuit, and programming. Furthermore, the course educates and studies the element and system technologies concerning sensing, control, image processing, audio signal processing, telecommunication, and network technologies.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
池永　全志 IKENAGA　Takeshi	コンピュータネットワーク　インターネット 経路制御　通信品質制御　マルチホップ無線網 Computer Network, Internet, Routing, Quality of Service, Wireless LAN, Energy Efficient Networking	インターネット工学特論 Advanced Internet Technologies
河野　英昭 KAWANO　Hideaki	ソフトコンピューティング　画像理解　パターン認識 クラスタリング　人間共生システム Softcomputing, Image Understanding, Pattern Recognition, Clustering, Human Symbolic System	ソフトコンピューティング特論 Softcomputing
芹川　聖一 SERIKAWA　Seiichi	センサ　計測　知的センシング　画像処理 センシングシステム　組み込みシステム Sensor, Measurement, Intelligent Sensing, Image Processing, Sensing System, Embedded System	センシング基礎特論 Sensing Engineering
張　力峰 ZHANG　Lifeng	画像圧縮　画像融合　バイオメトリクス認証 画像センシング　生物画像識別　高齢者支援 Image Compression, Image Fusion, Biometric Authentication, Image Sensing, Creature Identification, Elderly Support	画像信号処理特論 Advanced Image Signal Processing

中司　賢一 NAKASHI　Kenichi	アナログ回路　低消費電力集積回路　RF 回路 システム LSI　センサーシステム Analog Integrated Circuits, Low Power Integrated Circuits,RF Circuits, System LSI, Integrated Sensor Systems	電子回路設計特論 Analog Integrated Circuit Design
中藤　良久 NAKATOH　Yoshihisa	音声認識　音声合成　音声圧縮　オーディオ符号化 聴覚処理　補聴処理　福祉支援 Speech Processing (Recognition, Synthesis, Coding, etc) Assistive Technologies (Hearing Aid, etc), Accessibility	電子システム開発特論 Advanced Electronic System Development 技術者コミュニケーション論Ⅰ,Ⅱ Communication Skills for Engineer Ⅰ,Ⅱ
松嶋　徹 MATSUSHIMA Tohlu	環境電磁工学　電気電磁回路　低電磁ノイズ実装 高速デジタル通信 Electromagnetic Compatibility (EMC), Electrical and Electromagnetic Circuit, Low Electromagnetic Noise Packaging, High Speed Digital Signaling	環境電磁工学特論 Electromagnetic Compatibility 回路実装・システム設計特論 Advanced Design for High Speed Digital Circuit
水町　光徳 MIZUMACHI Mitsunori	音響・空間信号処理　特徴抽出　音源分離　雑音除去 残響除去 Acoustic Signal Processing, Acoustic Feature Extraction, Sound Source Separation, Noise Reduction, Dereverberation	音響信号処理特論 Advanced Acoustic Signal Processing
山脇　彰 YAMAWAKI　Akira	ディジタル回路システム　ディジタル回路設計法 センサ応用システム　リコンフィギャラブルシステム 組み込みシステム　コンピュータアーキテクチャ Digital Circuit Systems,Digital Circuit Design, Sensor Application Systems,Reconfigurable Systems, Embedded Systems, Computer Architecture	ディジタル回路システム特論 Digital Circuit System
楊　世淵 YANG　Shiyuan	光情報処理　光計測　ディジタルホログラフィ 三次元計測　位置検出システム Optical Information Processing, Optical Measurement, Digital Holography, 3D Measurement, Position Detection System	光計測システム特論 Optical Measurement System
本田　崇 HONDA　Takashi	磁気応用　マイクロマシン　マイクロロボティクス バイオミメティクス　科学教材 Applied Magnetics, Micromachine, Microrobotics, Biomimetics, Science Education	ＭＥＭＳ工学特論 Micro Electromechanical Systems
脇迫　仁 WAKIZAKO　Hitoshi	センサ　画像処理　距離画像　ロボット　品質工学 Sensor, Image Processing, Range Image, Robot, Industrial Engineering	ディジタル信号処理特論 Digital Signal Processing
大輪　拓也 OHWA Takuya	確率論　グラフ理論　機械学習　イジングマシン Probability Theory, Graph Theory, Machine Learning, Ising Machine	確率特論 Advanced Probability Theory

酒井　浩 SAKAI　Hiroshi	数理論理学　計算論理数学　情報数学　ラフ集合理論 論理プログラム Mathematical Logic, Computational Logic, Computational Mathematics, Rough Set Theory, Logic Program	計算数学特論 Advanced Computational Mathematics
平之内 俊郎 HIRANOUCHI Toshiro	類体論、代数的K理論 Class Field Theory, Algebraic K-theory	応用代数学特論 Advanced Applied Algebraic Theory
藤田　敏治 FUJITA　Toshiharu	数理計画　最適化　動的計画　決定過程 オペレーションズ・リサーチ Optimization, Mathematical Programming, Dynamic Programming Theory, Decision Processes, Operations Research	計画数学特論 Advanced Mathematical Programming and Control

9. 応用化学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
応用化学コース Applied Chemistry Course	物質や材料の高度利用が要求される２１世紀の科学技術の要請に応えるために，常に目的に応じた新規な機能をもつ分子の合成，材料の開発が要求される。それと同時に，それらが示す機能を高度に制御していく手法も必要である。また，開発した材料等を利用するためのシステムやプロセスに関する知識も不可欠である。 このような社会的要請に応え，高度な物質と材料の開発，システムの構築に対応できる学生を育成するため，応用化学を基盤とした幅広い教育研究を行う。 To meet the scientific and technological demands of the 21st century, which call for the sophisticated use of substances and materials, there is an urgent need for materials development and synthesis of molecules having functions relevant to their intended applications. In addition, methods for the sophisticated control of these functions are also necessary. Furthermore, knowledge relating to the systems and processes in which the developed materials can be used is essential. To nurture students who can respond to the aforementioned demands and develop sophisticated substances and materials and build systems, we conduct a wide range of education and research based on applied chemistry.

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
荒木　孝司 ARAKI　Koji	有機合成　構造有機化学　超分子化学　分子認識 大環状化合物 Organic Synthesis, Supramolecular Chemistry, Molecular Recognition, Macrocycles	機能有機化学特論 Functional Organic Chemistry 物理有機化学特論 Physical Organic Chemistry
植田　和茂 UEDA　Kazushige	蛍光体　透明導電体　酸化物　半導体　電子構造 Phosphors, Transparent Conductors, Oxides, Semiconductors, Electronic Structure	精密無機材料合成特論 Advanced Inorganic Materials Chemistry
横野　照尚 OHNO　Teruhisa	酸化チタン光触媒　可視光応答型光触媒 ナノ反応場分離型光触媒　表面修飾酸化チタン光触媒 酸化チタンナノチューブ TiO_2 Photocatalyst, Visible Light Responsive Photocatalyst, Nano-Reaction Sites Separated Photocatalyst, Surface Modificated TiO_2 Photocatalyst, Titania Nanotube	光触媒機能工学特論 Advanced Functional Photocatalytic Engineering
岡内　辰夫 OKAUCHI　Tatsuo	有機合成　有機金属　有機半導体 複素環化合物合成　炭素骨格形成反応 Organic Synthesis, Organometallic Chemistry, Organic Semiconductor, Heterocyclic Chemistry, C-C bond formation	有機合成化学特論 Advanced Synthetic Organic Chemistry 有機金属化学特論 Advanced Organometallic Chemistry

北村　充 KITAMURA　Mitsuru	有機合成　全合成　天然物　アミノ化　ジアゾ化合物 アジド　複素環 Organic Synthesis, Total Synthesis, NaturalProducts, Amination, Diazo-compouns, Azido, Heterocycles	精密有機合成化学特論 Advanced Syntheses and Reactions in Organic Chemistry
齋藤　泰洋 SAITO　Yasuhiro	熱物質移動現象　数値流体力学 Heat and Mass Transfer, Computational Fluid Dynamics	移動現象特論 Transport Phenomena
佐藤　しのぶ SATOU　Shinobu	バイオ電気化学　超分子化学　バイオチップ Bioelectrochemistry, Supramolecular chemistry, Biochip	バイオ計測学特論 Advanced Bioanalytical Chemistry
清水　陽一 SHIMIZU　Youichi	無機材料化学　電気化学　機能材料物性学 Functional Ceramic Material, Electrochemistry, Solid State Ionics, Sensor Chemistry	センサ化学特論 Chemical Sensor Technology 無機化学概論 Inorganic Chemistry
城﨑　由紀 SHIROSAKI　Yuki	生体材料　再生医療　細胞　組織工学 Biomaterials,　Regenerative Medicine, Cell, Tissue Engineering	生体機能化学特論 Advanced Biofunctional Chemistry
竹中　繁織 TAKENAKA　Shigeori	インターカレータ　バイオチップ　核酸 たんぱく質工学　癌診断 Intercalator , Biochip, Nucleic Acid Chemistry, Protein Engineering, Cancer Diagnosis	バイオ分析化学特論 Advanced　Analytical Chemistry
柘植　顕彦 TSUGE　Akihiko	構造有機化学　シクロファン　分子認識 生体関連化学　分子組織学 Structural Organic Chemistry, Cyclophane, Molecular Recognition, Biologically-Relevant Chemistry, Molecular Histology	構造有機化学特論 Structural Organic Chemistry
坪田　敏樹 TSUBOTA　Toshiki	ダイヤモンド　炭素材料　電気化学キャパシタ Diamond, Carbon Material, Eelectrochemical Capacitor	ナノ材料化学特論 Nanomaterial Chemistry 機能材料創製特論 New Functional Material
中戸　晃之 NAKATO　Teruyuki	無機ナノシート　液晶　ソフトマテリアル 無機－有機相互作用　光機能材料 Inorganic Nanosheet, Liquid Crystal, Soft Material, Inorganic-Organic Interactions, Photofunctional Material	集合体化学特論 Chemistry of Hybrid Materials 無機化学概論 Inorganic Chemistry
毛利　恵美子 MOURI　Emiko	ソフトマテリアル　高分子　セルロース材料 フラーレン複合材料 Soft Materials, Polymer, Cellulose Materials, Fullerene Composite	高分子科学特論 Advanced Polymer Science
森口　哲次 MORIGUCHI　Tetsuji	構造有機化学　芳香族　錯体化学　有機半導体 光機能材料 Structural Organic Chemistry, Aromatics, Coordination Chemistry, Organic Semiconductor, Light functional materials	錯体化学特論 Advanced Coordination Chemistry
山村　方人 YAMAMURA　Masato	コーティング　相分離　ポリマーフィルム　乾燥 Thin Liquid Film Coating, Phase Separation, Polymer Film, Drying	化学工学概論 Chemical Engineering Exercise 工業反応装置特論 Advanced Chemical Reaction Engineering

吉田　嘉晃 YOSHIDA　Yoshiaki	高分子化学　有機合成　有機機能材料　環境調和型高分子 Polymer Chemistry, Organic Synthesis, Functional Organic Materials, Sustainable Polymers	機能性高分子化学特論 Functional Polymers
渡辺　真仁 WATANABE　Shinji	物性理論　磁性　超伝導　量子輸送現象　量子多体系　強相関電子系 Condensed Matter Physics Theory, Magnetism, Superconductivity, Quantum Transport Phenomena, Quantum Many Body System, Strongly Correlated Electron System	物性物理学特論 Advanced Solid State Physics

10. マテリアル工学コース

【教育コースの概要】 Outline of Education Courses

教育コース Education Courses	概　　要 Outline
マテリアル工学コース Materials Science and Engineering Course	材料の持つべき物性を満足する構造を決める「物性最適化」と，そのような構造を合成するための「合成最適化」に関する学問体系を核とした基礎分野の上に成り立ち，実際に新規金属材料やセラミックスなどの開発を行うことができる高度な実験並びに専門技術を修得できるようカリキュラムを編成している。 また，材料科学工学の深化・細分化・応用拡大が急速に展開される現代の社会情勢に対応するため，「１．材料の構造・性質，２．材料の機能・設計，３．材料のプロセス」の３本柱を中心にして，“実践的な材料開発・応用ができる研究者，高度専門技術者の育成”を目指した教育研究を行う。 Building on the basic areas defined by the academic framework relating to physical properties optimization, which determines the structure that satisfies the necessary physical properties of a material, and Synthesis Optimization for synthesizing these kinds of structures, we have built a curriculum that allows students to acquire knowledge of sophisticated experiments as well as the expertise to develop materials such as new metals or ceramics. Moreover, to respond to the current state of society where fragmentation, and the expansion of the range of applications in materials science engineering are progressing fast, we conduct education and research centered around three pillars—1) materials structure/properties, 2) materials function/design, and 3) materials processing—thus aiming to “nurture researchers and highly expert engineers who are capable of practical material development and application.”

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

担当教員 Teachers in Charge	研究内容（キーワード） Research Contents （Keyword）	担当授業科目 Subject
石丸　学 ISHIMARU　Manabu	量子ビーム技術　構造解析 透過電子顕微鏡　シミュレーション Quantum Beam Technology, Structure Analysis, Transmission Electron Microscopy, Simulation	極微構造解析学特論 Advanced Structure Analysis
北村　貴典 KITAMURA　Takanori	溶接　継手強度　溶接変形　熱伝導 Welding, Joint Strength, Welding Deformation, Heat Conduction	溶接力学特論 Welding Mechanics
孫　勇 SUN　Yong	半導体物理　半導体デバイス　SiC 結晶成長 固体物理　水素プラズマ低温スパッタリング Semiconductor Physics, Semiconductor Devices, SiC Crystal Growth, Solid State Physics, Hydrogen Plasma Sputtering	ナノ材料およびデバイス特論 Nanomaterials & Nanodevices

高須　登実男 TAKASU　Tomio	素材プロセス　材料リサイクル　金属製錬 廃棄物処理プロセス開発と制御 Materials Processing, Materials Recycling, Metallurgical Extraction and Refining, Development and Control of Waste Treatment Processes	材料反応速度特論 Advanced Reaction Kinetics in Materials Processing
徳永　辰也 TOKUNAGA　Tatsuya	材料・プロセス設計　状態図　相平衡　相変態 Materials Design and Processing, Phase Diagrams, Phase Equilibria, Phase Transformations	材料相変態特論 Phase Transformations in Materials
中村　和磨 NAKAMURA　Kazuma	物性理論　第一原理計算　多体摂動論 低エネルギー有効模型導出　強相関電子系 Condensed Matter Theory, First Principles Calculation, Many-Body Perturbation Theory, Ab Initio Derivation of Effective Low-energy Model, Strongly Correlated Electron System	固体物理学特論 Advanced Solid State Physics
堀出　朋哉 HORIDE　Tomoya	薄膜　超伝導材料　ナノ構造　材料物性 Thin Film Materials, Superconducting Materials, Nanostructure, Physical Properties	薄膜材料学特論 Advanced Thin Film Materials
堀部　陽一 HORIBE　Yoichi	機能性材料　材料物性　相転移　電子顕微鏡 Functional Materials, Physical Properties, Phase Transitions, Electron Microscopy	構造相転移学特論 Advanced Structural Phase Transition
松本　要 MATSUMOTO Kaname	超伝導　量子効果　薄膜　ナノ構造　エネルギー Superconductivity, Quantum Effect, Thin Film, Nanostructure, Energy	マテリアルデザイン特論 Materials Design
美藤　正樹 MITO　Masaki	超伝導　ＳＱＵＩＤ　精密磁気測定　超高圧実験 磁性ナノ粒子　超音波活性 Superconductivity, Superconducting Quantum Interference Device, Precise Magnetic Measurement, High-Pressure Experiment, Magnetic Nanoparticles, Shear -Wave Activity	量子物性特論 Quantum Condensed Matter
本塚　智 MOTOZUKA　Satoshi	粉体工学、メカノケミストリー、集合組織、界面 Powder Technology, Mechanochemistry, Texture, Interface	粉体プロセス特論 Powder Technology
山口　富子 YAMAGUCHI　Tomiko	異種金属接合　レーザ加工処理　表面改質 改質層の特性評価 Dissimilar Metal Joining, Laser Processing, Surface Modification, Characterization of the Modified Layer	表面改質工学特論 Surface Modification
横山　賢一 YOKOYAMA　Kenichi	材料強度　環境材料　生体材料　破壊 Strength of Materials, Corrosion, Biomaterials, Fracture	環境材料強度学特論 Environmental Degradation of Materials

Ⅱ．博士後期課程　＜Doctoral　Programs＞

工学専攻　＜Department of Engineering＞

工学専攻は，「ものづくり」を基盤とした最先端科学技術分野における高度な知識を有し，その科学技術社会への波及効果を十分に理解していることに加え，複数の専門分野の知識を身に付け，問題解決能力，独創力，創造性及び実践的技術者としての必要な資質を持ち，イノベーションを創出できる能力を有する人材を養成する。さらに，グローバル化する社会の中で，異文化を理解し多文化環境下で新しい価値を生み出す能力を持ち，かつ，リーダーシップを発揮できる人材を養成する。

そのために，複数の専門領域の学識と実務に使えるコミュニケーション力・マネージメント力を身につけさせるよう総合的な教育研究を行う。

The Graduate School of Engineering offers opportunities to research in multiple fields with a set of courses for expertise, communicative skills and leadership management. In order to develop students' knowledge and abilities, the Graduate School focuses not only on fundamental and up-to-date knowledge in the related engineering fields so that students can envision its impact and influence on society, but also on the mastery of several engineering fields which contributes to the creation of innovative technologies. Students should, thus, acquire the leadership skills based on cross-cultural understanding that, in turn, can provide new values in various multicultural environments.

【各専門領域の概要】　Outline of Education Courses

専門領域 Major	概　　要 Outline
建築学 Architecture	心豊かな生活空間を創造するための建築・都市空間に対する計画やデザイン，および安全で快適な建築物を実現するための構造設計，建築環境，建築施工などの技術について教育研究を行う。 This course conducts education and researches on architectural planning and design of buildings or urban areas, in which affluent human living spaces are created. In addition, education and research about the architectural technology of structural design, environmental design or constructions, etc. by which buildings supporting safe and comfortable living are realized, are also conducted.

国土デザイン Civil Engineering	「社会基盤施設に関するもの創りをベースとして，都市の再生，さらには都市の持続や自然災害に対する防災システムなど，都市の安全・安心に関わる技術」と「調和の取れた環境デザインを目標として，日常生活における環境問題を克服し，次世代に安全で潤いのある生活空間を提供するための技術」について教育研究を行う。 This course conducts education and researches on “Civil Engineering Technology of social infrastructure facilities which covers urban regeneration, sustainability and disaster prevention system” and “Environmental Design that takes into account the development, conservation and regeneration of cities and regions to provide the next generation with a safe, secure and sustainable society”.
知能制御工学 Control Engineering	種々の動的な装置には，高性能化，小型化，高知能化技術，あるいは人間に優しいなどの特性が要求される。本コースではこのような要求にこたえるために，制御工学，知能工学，計測工学，電気工学および機械工学などからなるメカトロニクスを中心とした教育研究を行う。 Various machines are commonly expected to be designed to possess state-of-the-art technologies such as higher performance, smaller size, artificial intelligence technologies, and even human-friendly features. This course provides students with a graduate program focused on mechatronics, which encompasses control engineering, artificial intelligence, instrumentation engineering, electrical engineering, and mechanical engineering.
機械工学 Mechanical Engineering	今後も新しい「ものづくり」の中心的役割を担うのが機械工学である。本コースでは，機械宇宙システム工学コースと連携して，１)材料に要求される様々な機能・強度を実現するための各種新素材や機能材料の力学的挙動の解明と機能発現・強度評価，２)機械や装置の生産に関係する加工現象解析，加工装置の性能向上，設計から生産に至る情報処理やそれを統合するシステム技術，３)熱流体エネルギーの変換と高効率利用，熱流体・粒子間の力学的相互作用によって発生する諸現象の解明と応用を核とした教育研究を行い，幅広い視野を持つエンジニアを養成する。 Mechanical engineering plays a central role in new products manufacturing (“Monozukuri”) at all times. This mechanical engineering course is performed in collaboration with the mechanical and space systems engineering course. The education and research provided in the course aims at training engineers with broad horizons based on the following: 1) Study of mechanical behavior of advanced materials and functional materials so as to choose the most adequate material with regards to customer’s requirements, such as functionality and strength. 2) Study of production process analysis of machines and products, high performance of manufacturing equipment, and information and its integrated system technology from design to production.

	3) Study of energy conversion of heat transfer, fluid dynamics, and high performance systems, as well as the study of mechanical interaction phenomena between particles.
機械宇宙システム工学 Mechanical and Space Systems Engineering	宇宙システムに代表される複雑な工学システムを，機械工学を軸として構築できる素養を身につけるために，基礎となる機械工学の知識をシステム工学・プロジェクト管理の観点で組み合わせることで，宇宙システムに関する種々の技術課題について教育研究を行う。 This course offers education and researches on various technical issues related to space systems, aiming to train a mechanical engineer to be able to establish complex system represented by a space system, through the perspectives of system engineering and project management.
電気宇宙システム工学 Electrical and Space Systems Engineering	宇宙システムに代表される複雑な工学システムを，電気工学を軸として構築できる素養を身につけるために，基礎となる電気工学の知識をシステム工学・プロジェクト管理の観点で組み合わせることで，宇宙システムに関する種々の技術課題について教育研究を行う。 This course offers education and researches on various technical issues related to space systems, aiming to train an electrical engineer to be able to establish complex system represented by a space system, through the perspectives of system engineering and project management.
電気エネルギー工学 Electrical Engineering	巨大エネルギーシステムから分散型電源・自動車・宇宙に至るまで，これからの環境調和高度エネルギー社会をインフラとして支える電気エネルギーの発生・輸送・消費・貯蔵，および超高速･超高密度情報記録､高出力素子から固体照明まで、次世代の電子デバイスと、半導体を柱にしたデバイス材料の開発と応用､デバイス化プロセス、新機能デバイスの開発に関する様々な技術課題について教育研究を行う。 The course provides the highest level engineering education and research projects based on the multi-disciplinary approach over the electric energy management technology and electronic device technology toward future green society, covering a variety of industry segments including, power electronics, large scale energy system, decentralized power source, automotive and spacecraft. The course addresses innovative technological issues related to material, design, production process, assembling and applications of electronic devices together with generation, transport, consumption and storage of electric energy.

電子システム工学 Electronic Engineering	ディジタルテレビ，携帯電話，自動車の電子制御ユニットなど，マイクロプロセッサを組み込んだ高度な電子システム製品が多くなっている。 本コースでは，アナログ・ディジタル回路，プログラミングなどの基礎技術から，センシング・制御技術，画像・音声信号処理技術，通信・ネットワーク技術などのシステム要素技術，およびこれらを統合するシステム化技術についての教育研究を行う。 All around us, there are various products using microcomputers such as a digital televisions, mobile phones, and automobile electrical control units; the number of these systems increases day by day. The Electrical Engineering course offers an education concerning basic technologies such as an analog circuit, a digital circuit, and programming. Furthermore, the course educates and studies the element and system technologies concerning sensing, control, image processing, audio signal processing, telecommunication, and network technologies.
応用化学 Applied Chemistry	物質や材料の高度利用が要求される２１世紀の科学技術の要請に応えるために，常に目的に応じた新規な機能をもつ分子の合成，材料の開発が要求される。それと同時に，それらが示す機能を高度に制御していく手法も必要である。また, 開発した材料等を利用するためのシステムやプロセスに関する知識も不可欠である。このような社会的要請に応え，高度な物質と材料の開発，システムの構築に対応できる学生を育成するため，応用化学を基盤とした幅広い教育研究を行う。 To meet the scientific and technological demands of the 21st century, which call for the sophisticated use of substances and materials, there is an urgent need for materials development and synthesis of molecules having functions relevant to their intended applications. In addition, methods for the sophisticated control of these functions are also necessary. Furthermore, knowledge relating to the systems and processes in which the developed materials can be used is essential. To nurture students who can respond to the aforementioned demands and develop sophisticated substances and materials and build systems, we conduct a wide range of education and research based on applied chemistry.
マテリアル工学 Materials Science and Engineering	材料の持つべき物性を満足する構造を決める「物性最適化」と，そのような構造を合成するための「合成最適化」に関する学問体系を核とした基礎分野の上に成り立ち，実際に新規金属材料やセラミックスなどの開発を行うことができる高度な実験並びに専門技術を修得できるようカリキュラムを編成している。 また，材料科学工学の深化・細分化・応用拡大が急速に展開される現代の社会情勢に対応するため，「１．材料の構造・性質，２．材料の機能・設計，３．材料のプロセス」の３本柱を中心にして，“実践的な材料開発・応用ができる研究者，高度専門技術者の育成”を目指した教育研究を行う。 Building on the basic areas defined by the academic framework relating to

	physical properties optimization, which determines the structure that satisfies the necessary physical properties of a material, and Synthesis Optimization for synthesizing these kinds of structures, we have built a curriculum that allows students to acquire knowledge of sophisticated experiments as well as the expertise to develop materials such as new metals or ceramics. Moreover, to respond to the current state of society where fragmentation, and the expansion of the range of applications in materials science engineering are progressing fast, we conduct education and research centered around three pillars—1) materials structure/properties, 2) materials function/design, and 3) materials processing—thus aiming to "nurture researchers and highly expert engineers who are capable of practical material development and application."

【教員の研究内容，授業科目】 Research and Courses of Faculty Members (Professors)

博士前期課程の【教員の研究内容，授業科目】を参照のこと。

なお，出願に関しては，指導を希望する教員に事前連絡を行い，研究テーマ及び学位取得までの研究計画について確認しておくこと。

Please refer to Master's Programs "Research and Courses of Faculty Members (Professors)".

In regard to their application, applicants are required to contact the professor they hope to study under at Kyutech beforehand and then discuss their research topic and research plan for obtaining the degree with him/her.