Degree Programs Conducted in English

Osaka University, Graduate School of Engineering offers the following Master's Degree and Doctoral Degree programs which are conducted in English

[Enrollment in October 2020]

For Japanese Government (Ministry of Education, Culture, Sports, Science and Technology: MEXT) Scholarship Students

The Osaka University Graduate School of Engineering (GSE) offers the following special programs which are conducted in English.

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Biotechnology Global Human Resource Development Program for Industry-University Co-Creation

1. Program Summary

The aim of this program is to expose young scientists to state-of-the-art research techniques and in-depth knowledge of advanced biology, chemistry, physics and bioengineering, so that they may harness the potential of biotechnology applicable to Japanese industries as well as academia.

2. Important Program Features

(1) English will be used for all the lectures, instructions, and research-related activities. In the Basic Courses, students will acquire a solid background in advanced biotechnology. In the Project-based Training Course students will acquire the ability to design and execute research in a critical manner. In the Advanced Research Proposal Course students will acquire the ability to propose original research plans independently as a scientist. Through immersion in Special Research students will have ample time during the remaining four years to attain their Master's and Doctoral Degrees in Engineering.

(2) The Basic Courses, which will be held in the first semester of the master's program, will deal with a wide range of subjects: advanced biotechnology, and basics and applications in the fields of "Biotechnology," "Life Science," and "Biochemistry."

(3) In the first semester of the master's program, students will take the Project-based Training Course. This course is designed to prepare students as research engineers with the ability to conceive innovative ideas, by synthesizing knowledge from different disciplines, and the techniques for devising research plans towards realizing these ideas. In this course, each student will choose one laboratory different from their own, and will produce a short-term research work under the supervision of the professor of that laboratory.

(4) All students will conduct their Special Research in the second, third, and fourth semester of the master's program, under the supervision and instruction of his/her professor.

(5) In the first semester of the doctoral program, students will take the Advanced Research Proposal Course. This course is designed to prepare students as a research scientist with the ability to propose original research plans independently, so that they can complete their doctoral dissertation. In this course, each student will propose a research plan in a field different from their own, make a presentation, and have discussions with members of faculty, and doctoral program students of related fields to gain diversified/multiple perspectives. During the period of the doctoral program, the student will devote themselves to Special Research while expanding their knowledge by taking the Advanced Biotechnology Exercise and Advanced Biotechnology Seminar courses.

(6) For Special Research in the master's and doctoral programs, each student will choose one laboratory among Bioenvironmental Science (Watanabe Lab.), Cell Technology (Muranaka Lab.), Bioprocess Systems Engineering (Kino-oka Lab.), Bioresource Engineering (Fukusaki Lab.), Biochemical Engineering (Omasa Lab.),

Biomolecular Science and Engineering (Nagai Lab.), Macromolecular Biotechnology (Uchiyama Lab.)and Applied Microbiology (Fujiyama Lab.). Students can change their laboratory after completion of the master's program, if they wish to do so.

(7) Improving Japanese skill is also required during the course. N4 level Japanese Language Proficiency Test or equivalent is required for obtaining the master's degree and N3 level or equivalent is required for obtaining the doctoral degree.

(8) In the doctoral program, each student will take an internship program. Intern ship programs are conducted by collaborative research laboratories of the Department of Biotechnology or related companies.

3. Requirements for the Completion of the Course and Obtaining the Degree

(1) Master's Program

① Requirements for completion of the program: completion of two compulsory courses, the Project-based Training Course and Safety Education Course for a total of no less than 30 credits; completion of **Special Research**; N4 level of the Japanese Language Proficiency Test or equivalent; acceptance of the master's thesis by the faculty; and passing of the final examination of the course.

② Degree: Master of Engineering

(2) Doctoral Program

① Requirements for completion of the course: completion of Seminar on Frontier Research Proposal to acquire two compulsory credits; completion of Courses of Frontier Biotechnology Exercises and Frontier Biotechnology Seminars to acquire a minimum of four credits; completion of **Special Research**; N3 level of the Japanese Language Proficiency Test or equivalent; successful defense of doctoral dissertation and passing of the final examination of the program.

② Degree: Doctor of Philosophy in Engineering

4. Admission Quota

Master's Program 5, Doctoral Program 3

5. Program HP

http://www.bio.eng.osaka-u.ac.jp/gh_resour_prog/index.html

Chemical Science Course

1. Program Summary

Materials Emergence Program by Quantum Design and Experimental Verification (MEPQDEV) offers two cross-correlating postgraduate courses, Chemical Science Course (CSC), and Quantum Engineering Design Course (QEDC). This program provides collaborative education by CSC and QEDC through the kinkages established by Quantum Engineering Design Research Initiative.

Chemical Science Course (CSC) provides the post-graduate course covering all aspects of "Chemistry", the center of science. "Chemistry" provides a broad spectrum of information and provides the indispensable basis that underlines our materials society, and keys for the future of society.

2. Important Program Features

(1) English will be used in all lectures, instructions, and research related activities.

(2) In the first and second semesters, students will acquire and establish a fundamental knowledge for applied chemistry through 18 intensive courses given by more than 40 professors in the fields of Physical Chemistry, Synthetic Chemistry, and Biological Chemistry. From the second year, the program is geared towards developing within each student the ability to do creative scientific research. Accordingly, the single most important facet of the curriculum for any individual is their own research project.

(3) Also in the initial semester, students choose a research director, with the guidance of the faculty members and the advisory board of the course, and will select their thesis advisor after completion of a few week rotations. Thereafter, students will become involved in library research on their projects and will soon begin actual experimental or theoretical work. The supervisor will be assigned among all the professors in the Department of Applied Chemistry. (Check the web page of the department: http://www.chem.eng.osaka-u.ac.jp/appl/index_e.html).

(4) The following are some of the lectures offered in the master's course:

Organometallic Chemistry I
Organometallic Chemistry II
Industrial Organic Chemistry
Organic Chemistry Mechanism
Chemistry of Organic Resources
Environmental Chemistry
Organic Stereochemistry
Structural Organic Chemistry
Functional Polymeric Materials
Chemistry of Biomaterials
Advanced Inorganic Functional Materials
Advanced Organic Materials Chemistry
Condensed Physical Chemistry
Advanced Materials Chemistry
Energy Conversion Chemistry

Organic Electronic Materials
Applied Radiation Chemistry
Functional Chemistry of Natural Materials
Bioinorganic Chemistry
Chemistry of Biocatalysis
Structural Biochemistry
Advances in Chemical Biology
Functional Organic Chemistry
Functional Supramolecular Chemistry
Molecular Recognition Chemistry
Molecular Excitation Chemistry

3. Requirements for the Completion of the Course and Obtaining the Degree

(1) Master's Program

① Requirements for completion of the program: completion of elective courses in the present program for a total of no less than 30 units of credit; completion of Special Research; acceptance of the master's thesis by the faculty; and successful passing of the final examination of the course.

② Degree: Master of Engineering

(2) Doctoral Program

① Requirements for completion of the program: completion of one compulsory course of Research Proposal Contest and elective Frontier Chemistry, Adv.1 and 2 for a total of no less than four units of credit; satisfactory performance in the mid-term review of the Special Research; successful defense of the doctoral dissertation; and successful passing of the final examination of the program.

② Degree: Doctor of Philosophy in Engineering

4. Admission Quota

Master's Program 2, Doctoral Program 3

5. Program HP

http://www.chem.eng.osaka-u.ac.jp/appl/course/

International Priority Graduate Program of "Quantum Engineering Design Course"

1. Program Summary

This program aims to produce human resources who contribute to the sustainable development of society by equipping a new generation of young scientists with fundamental knowledge and cutting-edge research skills in quantum engineering design. To this end, the program will give students the advanced knowledge in physics, chemistry, and materials science, and allows students to develop state-of-the-art computational materials design (CMD) techniques, to apply them to new materials, to predict their properties and to design materials with more desirable properties.

2. Important Program Features

(1) All students belong to International Priority Graduate Program of "Applied and Engineering Physics" and conduct research under the academic supervision and instruction of a professor or an associate professor. Each student will choose one research theme from the following categories:

1 Creation of Frontier Mathematical Methods'
2 Elucidation of Emergent Material Function
3 Realization of New Generation Functional Materials

(2) QEDC offers this following essential lectures and seminars in the Master's and Doctor's courses as a specialized class which are focused on Quantum Simulation:

- ✔ Tutorials on Computational Nano-materials Design Ⅰ-Ⅳ
- ✔ Quantum Engineering Design Seminar Ⅰ-Ⅱ
- ✔ Quantum Engineering Design Seminar for Advanced Researches Ⅰ-Ⅱ

CMD is a multi-scale computer simulation method based on electronic structure theory and aims to clarify the governing factors behind the phenomena exhibited by various materials, and based on this knowledge, more desirable materials will be designed. It is the method to accelerate innovative materials development by giving design guidelines and conducting experiments in conjunction with the experimental groups.

3. Requirements for the Completion of the Course and Obtaining the Degree

(1) Master's Course

① Requirements: Completion of lectures and seminars corresponding to no less than 30 credits; completion of Special Research; submission and defense of the master's thesis; and passing the final examination of the course.
② Degree: Master of Engineering

(2) Doctoral Course

① Requirements: Completion of lectures and seminars corresponding to no less than 6 credits; completion of Special Research; successful defense of the doctoral dissertation; and passing the final examination of the course.
② Degree: Doctor of Philosophy in Engineering

4. Admission Quota

Master's Program 2, Doctoral Program 1

5. Program Website

http://www.dyn.ap.eng.osaka-u.ac.jp/QEDC/home.html
http://www.pstap.eng.osaka-u.ac.jp/index_e.html

6. Application Requirements
(The following items are common to all programs.)

(1) Nationality: The applicant must have the nationality of countries that has diplomatic relations with Japan.

(2) Age: The applicant must be less than 35 years of age as of April 1, 2020 (i.e. born no earlier than April 2, 1985.

(3) Educational background: The applicant must have graduated from a Japanese university or be recognized as possessing academic abilities equivalent to those of university graduates by his/her arrival in Japan. Applicants recognized as possessing academic abilities equivalent to those of university graduates must fulfill one of the following qualifications:

1 Master's Program:
① The applicant must have a bachelor's degree or an equivalent degree granted upon completion of an academic program of either a foreign university or a foreign educational institution whose term of study is at least 3 years or more, by September 30, 2020.
② The applicant is no younger than 22 years of age as of September 30, 2020 and is recognized as possessing academic abilities equivalent to those of university graduates, by passing "the Preliminary Examination of Applicant's Qualifications" conducted by Osaka University(See Note(7)) .

2 Doctoral Program:
① The applicant must have a master's degree or a professional degree by September 30, 2020
② The applicant is no younger than 24 years of age as of September 30, 2020 and is recognized as possessing academic abilities equivalent to those of university graduates, by passing "the Preliminary Examination of Applicant's Qualifications" conducted by Osaka University(See Note(7)).

(4) Language ability: The applicant must have a good command of English. Those whose formal education has been conducted in a language other than English must submit a certificate of English proficiency. Acceptable certificates include official test scores of the TOEFL, TOEIC, IELTS, TEAP, GTEC or CPE exams.

(5) Health: Applicants must be physically and mentally healthy enough to pursue study at the university.

(6) Attendance: The recipient of the MEXT scholarship must be able to travel to and arrive in Japan in early October 2020.

[Notes]

(1) Active members of the military and civilians employed by the military will be refused.

(2) Admission will be revoked if the applicant is not able to arrive in Japan by the designated date.

(3) Recipients of any other scholarships will not be considered for this scholarship.

(4) Admission will be revoked for applicants who are found to fail to meet the educational qualifications as specified in the application requirements by September 30, 2020.

(5) The applicant is already enrolled in a Japanese university with a residence status of "Student" , or the applicant is enrolled or plans to enroll in a Japanese university as a privately-financed international student between the time of the scholarship application and the start of the scholarship program is not eligible. This stipulation shall not apply if the applicant is enrolled or will be enrolled in a Japanese university as a privately-financed international student and will definitely return to their native country before the scholarship payment starts and obtain a NEW "Student" visa before arriving in Japan.

(6) The applicant plans to engage in fieldwork or an internship in countries other than Japan after submitting the scholarship application is not eligible.

(7) Applicants who fall under (3)-1-② or (3)-2-② must take "the Preliminary Examination of Applicant's Qualifications" in advance. Such applicants must consult the Student Support Affairs Section at the Student Affairs Division by October 20, 2019. The Student Support Affairs Section will announce details concerning the documents required for this procedure. Applicants will be informed of the results as soon as they are available.

7. Application Procedures

Every applicant must find, well in advance, a supervisor suitable for the research field in which the applicant is interested, and contact him/her by email to confirm whether the field is adequately fitting to his/her laboratory.

(1) Period of Application:
The application forms and other materials must be submitted to the Student Support Affairs Section, Student Affairs Division, Graduate School of Engineering, Osaka University by post or by hand, to arrive by the following deadline:
Application Period:
November 15, 2019 to November 30, 2019, 4:00 p.m. (Japan time)
***Strict observance(Admit no exceptions)**

(2) Address for Submissions:

Student Support Affairs Section, Student Affairs Division

Graduate School of Engineering, Osaka University

2-1 Yamadaoka, Suita, Osaka 565-0871, JAPAN
Telephone: +81-6-6879-7223

(3) Application Materials:

*All document are to be printed on A4 size paper whenever possible.

* Submit original documents or certified true copies (with the exception of 7).

* Application documents should be typed or handwritten in BLOCK letters in English. For documents in a language other than English, an English translation must be attached.

* Once application documents have been received, they will not be returned.

Materials	Details
1 Application Form	・ Fill out the prescribed "Application for Admission" form. ・A photograph (4cm×3cm) should be affixed to the first page. It should be taken within the last 3 months and should show the upper part of the body, without a hat, facing the camera.
2 Statement of Purpose	・ A Statement of Purpose of the applicant (no more than three double-spaced, typed pages), stating their research proposal.
3 Certificate of (Expected) Graduation / Completion	・A certificate or certified true copy of the certificate from the last school the applicant attended. Notes: (1) Applicants who (are expected to) have a master's degree should submit certificates of (expected) graduation/completion for both bachelor's and master's degrees. (2) Applicants whose last schools issued graduation (completion) certificates and degree certificates should submit both.
4 Certified Academic Records	・Certified Academic Records from the last school the applicant attended. Notes: (1) Applicants who (are expected to) have master's degrees should submit Academic Records for both their bachelor's and master's degrees, certified by the universities the applicants attended. (2) If there is no rating attached to the official transcript, please attach one as a separate document. e.g.: ① A+=90% and above, A=80% and above, B=70% and above, C=60% and above, D=50% and above, F=fail ② 100-90＝Excellent, 89-80=Very Good, 79-70 ＝ Good, 69-60=Satisfactory, 59-=Fail

5 Certificate of English Proficiency	・TOEFL, TOEIC, IELTS, TEAP, GTEC or CPE official test scores - Applicants who have completed an undergraduate or graduate degree program where the language of instruction and examinations were in English, an official statement from the school will be required, confirming the use of English as the language of instruction and examinations.
6 Letter of Recommendation	・No less than two letters of recommendation from different people. The letters should be addressed to **the President of Osaka University on the top of the letter** and at least one of the letters must be from the dean or head of the faculty or school or graduate school which the applicant attended, or the president (rector) of the university or institution that is the applicant's alma mater.
7 A Copy of Passport or Certificate of Citizenship	―
8 Abstract of Graduation Thesis	・The abstract of the applicant's graduation thesis or equivalent document, including figures etc.

8. Selection Schedule

Schedule	Selection Process
By the beginning of February 2020	The Graduate School of Engineering (GSE), Osaka University, will select preliminary candidates for the MEXT Scholarship from the pool of applicants by reviewing application materials and documents. These preliminary candidates will be notified and called in for an interview.
By the end of February 2020	The preliminary candidates will be interviewed by the representative professors.
By the end of March 2020	The preliminary candidates considered for the MEXT scholarship will be officially announced. ※We do not reply to individual inquiries regarding admission decisions.
By the end of July 2020	The final selection by the Japanese Government will be conducted. Successful applicants will be notified by post. Notifications will be sent to the address specified on the application form.

9. Term of Scholarship

(1) Master's Program:

2 years*

*If the MEXT scholarship programs will be conducted continuously after 2022, all applicants are able to apply for the extension of scholarship period for Doctoral Course.

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*If the MEXT scholarship programs will be conducted continuously after 2022, only 3 applicants are able to apply for the extension of scholarship period for Doctoral Course.

*The scholarship will be terminated if a student falls under one of the following cases: unsatisfactory academic achievement; failure to finish the master's program within 2 years; failure to the entrance examination of the doctoral program.

(2) Doctoral Program:

3 years

10. Scholarship Benefits

(1) Allowance (as of April 2019)

Master's Program: 147,000 JPY per month

Doctoral Program: 148,000JPY per month

*The amount of allowance is subject to change every year due to the Japanese government budget conditions.

(2) Travel Expenses:

1 Transportation to Japan:

Each grantee will be provided, according to his/her itinerary and route as designated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), with an economy class air ticket from the international airport closest to his/her place of residence (the address stated on the application) to an international airport (Mainly Kansai International Airport) in Japan. Expenses such as domestic transportation from his/her place of residence to the international airport (including transit in Japan), airport tax, and any special taxes for overseas travel will NOT be provided.

2 Transportation from Japan:

Each grantee returning to his/her home country within the last payment month of his/her scholarship will be provided, upon application, with an economy class air ticket for a flight from Kansai International Airport to the international airport closest to his/her place of return. Expenses such as domestic transportation from his/her place of residence to the international airport (including transit in his/her home country), airport tax, and any special taxes on overseas travel will NOT be provided.

[Notes]

(1) If the student wishes to return to their home country before/after the scholarship period ends due to personal reasons, return travel expenses from Japan will not be paid.

(2) If the grantee remains in Japan (to pursue further studies, employment, etc.) after the scholarship period ends, the return travel expenses will not be paid.

(3) Insurance premiums for travel to/from Japan shall be borne by the grantee. The airport the grantee departs from or returns to must be an airport of the country of his/her nationality.

(4) Entrance examination fees, enrollment fees and tuition: exempt.

11. Semester Starting Date

October 1, 2020
*Classes may start at a later date.

12. Miscellaneous

(1) Incomplete documents will not be accepted.

(2) The content of the submitted documents cannot be changed after the application procedure has been completed.

(3) Applications may be rejected or admission may be revoked even after matriculation, if any information or material in the application is found to be fraudulent.

(4) A breach of the pledge to MEXT will be cause for termination of the scholarship.

(5) The grantee must follow the rules of Osaka University. The scholarship will be terminated if a grantee is officially reprimanded by the university or fails to demonstrate his/her ability to complete his/her studies.

(6) Successful applicants will be strongly advised to learn about Japan (the people, society, culture, and geography) as well as the University prior to their arrival in Japan.

(7) Since the first installment of the scholarship payment will be made from one month to one and a half months after the grantee's arrival in Japan, we advise to bring at least 200,000 JPY to Japan to cover immediate living expenses and other necessary expenses. (If the place of residence or university requires additional expenses, the grantee must be informed of them.)

13. Policy on Handling Personal Information

(1) Names, addresses, and other personal information obtained through the application procedure will be used in the Entrance Examination Process, in the Announcement of the List of Successful Applicants, in the Admission Procedures, and in the distribution of program leaflets. For those admitted into Osaka University, personal information will also be used in academic-related matters(such as keeping academic and registration records), in student support matters(such as health care management, career support, etc.), and in school fee management.

(2) Information obtained through the entrance examination will be used in statistical analysis of examination results, and in research on admission methods.

14. Inquiries

Student Support Affairs Section
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