The educational changes and internationalization strategies with respect to Kyushu University’s engineering department

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Faculty, Graduate School and School of Engineering

Professor
Department of Mechanical Engineering
Where is Kyushu University located?

Fukuoka City

- Population: 1.5 million
- Largest in Kyushu and 5th in Japan
- Gateway to Asia
- 7th most livable city in the world
  (by “Monocle’s Quality of Life Survey 2016”)
**Chronological outline**

1911 Established as Kyushu Imperial University (consisting of College of Engineering and College of Medicine)

4th imperial university after Tokyo, Kyoto and Tohoku

1947 Name changed to Kyushu University

2005 Started relocating (to be completed in 2018)

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**Campus**

◆ Five campuses in Fukuoka area

- **Ito Campus (opened in 2005)**
Ito Campus

The largest campus in Japan

Students and faculty

Number of students

18,747

Number of faculty

2,089

9:1 student-to-faculty ratio

We can provide education and research individually tailored to each student.
## Undergraduate students

<table>
<thead>
<tr>
<th>School</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>11,844</td>
<td>72%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>School of Letters</td>
<td>716</td>
<td>40%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>School of Education</td>
<td>225</td>
<td>36%</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>School of Law</td>
<td>853</td>
<td>64%</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>School of Economics</td>
<td>1,094</td>
<td>78%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>School of Science</td>
<td>1,283</td>
<td>81%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>School of Medicine</td>
<td>1,314</td>
<td>59%</td>
<td>41%</td>
<td></td>
</tr>
<tr>
<td>School of Pharmaceutical Sciences</td>
<td>334</td>
<td>62%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>399</td>
<td>60%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>School of Engineering</td>
<td>3,692</td>
<td>91%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>School of Design</td>
<td>922</td>
<td>62%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>School of Agriculture</td>
<td>1,012</td>
<td>57%</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>The 21st Century Program</td>
<td>120</td>
<td>33%</td>
<td>67%</td>
<td></td>
</tr>
</tbody>
</table>

## Graduate schools

### Graduate Schools

- Many options for graduate level study!

18 graduate schools

- Graduate School of Humanities
- Graduate School of Integrated Sciences for Global Society
- Graduate School of Human-Environment Studies
- Graduate School of Law
- Law School (Professional Graduate School)
- Graduate School of Economics
- Graduate School of Science
- Graduate School of Mathematics
- Graduate School of Systems Life Sciences
- Graduate School of Medical Sciences
- Graduate School of Dental Science
- Graduate School of Pharmaceutical Sciences
- Graduate School of Engineering
- Graduate School of Design
- Graduate School of Information Science and Electrical Engineering
- Interdisciplinary Graduate School of Engineering Sciences
- Graduate School of Bioresource and Environmental Sciences
- Graduate School of Integrated Frontier Sciences
International students

The number of international students coming to Kyushu University is on the rise yearly.

- 2011: 1,866
- 2012: 1,931
- 2013: 1,969
- 2014: 1,972

International student ratio: 11%

92 countries and regions are represented at Kyushu University.

One out of every nine students is from overseas.

International students

- China, 1176 (53%)
- Korea, 255 (14.3%)
- Indonesia, 112
- Malaysia, 66
- Vietnam, 48
- Taiwan, 39
- Thailand, 46
- Bangladesh, 26
- Myanmar, 16
- Other Asian countries, 97
- Others, 199

KYUSHU UNIVERSITY
International connections

112 Number of foreign partner universities

Students do not need to pay additional tuition to the host institution.

School of Engineering and Graduate School of Engineering
### Statistics

#### Number of Faculty and Staff in Faculty of Engineering

<table>
<thead>
<tr>
<th>Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>109</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>88</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>88</td>
</tr>
<tr>
<td>Technical Staff</td>
<td>66</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>419</td>
</tr>
</tbody>
</table>

#### Number of Students in Graduate School of Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Master’s Course</th>
<th>Doctoral Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st year</td>
<td>2nd year</td>
</tr>
<tr>
<td>1st year</td>
<td>501</td>
<td>517</td>
</tr>
</tbody>
</table>

#### Number of Students in School of Engineering

<table>
<thead>
<tr>
<th>Year</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>858</td>
<td>858</td>
<td>880</td>
<td>1037</td>
<td>3633</td>
</tr>
</tbody>
</table>

#### Number of Foreign Students

<table>
<thead>
<tr>
<th>Type</th>
<th>Graduate</th>
<th>Undergraduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>288</td>
<td>153</td>
<td>441</td>
</tr>
<tr>
<td>Undergraduate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>288</td>
<td>153</td>
<td>441</td>
</tr>
</tbody>
</table>

### School and Graduate School of Engineering

#### Undergraduate School (6)
- Architecture
- Electrical Engineering and Information Science
- Material Science and Engineering
- Earth Resources, Marine and Civil Engineering
- Energy Science and Engineering
- Mechanical and Aerospace Engineering

#### Graduate School (12)
- Chemistry and Biochemistry
- Materials Physics and Chem.
- Chemical Systems and Eng.
- Civil and Structural Eng.
- Urban and Environmental Eng.
- Maritime Engineering
- Earth Resources Engineering
- Applied Quantum Physics and Nuclear Engineering
- Mechanical Engineering
- Hydrogen Energy Systems
- Aeronautics and Astronautics
Introduction of Kyushu University’s Engineering Programs

IUPE (International Undergraduate Programs)

International Undergraduate Programs in English (~2010)

- Applied Chemistry
- Civil Engineering
- Mechanical & Aerospace Engineering
- Electrical Engineering and Computer Science (2017~)
### Program Scheme of IUPE

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Term</td>
<td>Autumn Term</td>
<td>Autumn Term</td>
<td>Autumn Term</td>
</tr>
<tr>
<td>Spring Term</td>
<td>Spring Term</td>
<td>Spring Term</td>
<td>Spring Term</td>
</tr>
</tbody>
</table>

#### Liberal Arts
- Japanese Culture and Society
- Law
- Psychology
- Global Issues
- Japanese Language
- Economics etc.....

#### Science Core
- Calculus
- Mechanics
- Chemistry
- Cell Biology
- Heat and Wave Theory etc.....

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### Program Scheme of IUPE

<table>
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<tr>
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<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Term</td>
<td>Spring Term</td>
<td>Autumn Term</td>
<td>Spring Term</td>
</tr>
<tr>
<td>Spring Term</td>
<td>Autumn Term</td>
<td>Spring Term</td>
<td>Autumn Term</td>
</tr>
</tbody>
</table>

#### Common Engineering Classes
- Engineering Ethics
- Fundamentals of Electrical Engineering
- Introduction to Metallic Materials
- Advanced Engineering A & B
- Introduction to Engineering Analysis and Measurement etc.....

#### Specialized Classes
- Applied Chemistry Classes
- Civil Engineering Classes
- Mechanical & Aerospace Engineering Classes
- Electrical Engineering & Computer Sciences Classes
IUPE Students

~20 students/year

✓ Thailand
✓ China
✓ Korea
✓ India
✓ Vietnam
✓ Indonesia
✓ Malaysia
✓ Singapore
✓ Taiwan
✓ Uzbekistan
✓ Egypt
✓ Norway
✓ USA

120 students were enrolled since 2010

Career path of IUPE graduates

Got a job
20%

Studying in Japan
40%

Studying in Europe and USA
40%

Astra Daihatsu Motor (Indonesia)
Bosch Japan
Mitsubishi Motors Japan etc...

Oxford University
Delft University
Dartmouth College
University of Queensland
Tsinghua University
Technical University of Munich etc...

Kyushu University
University of Tokyo
Hokkaido University etc...

Most students continue their study in graduate schools
Double Degree Program

**Lund University (Sweden) From 2010**
- Masters program: Graduate in 3 years (Kyushu 2y + Lund 1y)
- Majors: Urban environment, urban construction, earth resources
- Participation to date: 6 outbound and 5 inbound students
- MOU renewed in 2015, automatically renewed every year

**Institute of Technology Bandung (Indonesia) From 2014**
- Masters program: Graduate in 3 years (Kyushu 2y + ITB 1y)
- Majors: Earth resources
- Participation to date: 2 students outbound and 1 student inbound

Double Degree Program (cont.)

**Gadjah Mada University (Indonesia) From 2015**
- Masters program: Graduate in 3 years (Kyushu 2y + UGM 1y)
- Majors: Urban environment, urban construction, earth resources
- Participation to date: 3 students inbound, outbound students are scheduled

**Chulalongkorn University (Thailand), MOU Expected in 2016**
- Masters program
- Majors: Earth resources
Asia Human Resources AQ Program

- Special additional program for students who want to find a job in Japanese company
- Two-year program for Master’s or Doctoral course students
- Features
  - Academic-Industrial Collaboration
  - Business Japanese / Business culture in Japan
  - Internship
  - Support for job hunting
- 113 students joined in 8 years
- Most of students are working in Japanese companies.

113 students joined in 8 years
Most of students are working in Japanese companies.

Student Exchange

Student Exchange between Kyushu University and Northern Arizona University

- Extended to university level in 2016.
- 3 students from Northern Arizona University
- 3 students from Kyushu University
Engineering Leaders English Program

✓ Five weeks from February to March
✓ At International Gateway in San Jose State Univ.
✓ With assistance of Kyushu Univ. California office

Aims
✓ Brush up English communication skills.
✓ Introduce the system and minds that lead to innovation and inspire the entrepreneurship mindset.

Program Contents of ELEP

Schedule

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week1-3</td>
<td>AM: English class for presentation</td>
<td></td>
<td></td>
<td></td>
<td>Field trip</td>
</tr>
<tr>
<td></td>
<td>PM: Lecture by entrepreneurs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week4</td>
<td>AM: English class for presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PM: Final presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZTO (Zero To One Program)</td>
</tr>
</tbody>
</table>

Field trips
✓ Stanford Univ., Google, Microsoft, Intel, HP, Plug and Play etc.
Short-term Training Abroad Program (Q²PEC)

Qshu-Queensland Program for English Communication

- Five weeks from August to September
- Institute of Continuing & TESOL Education in Univ. Queensland
- With assistance of Kyushu Univ. UQ office

Aims
- Brush up skills of English communication.
- Expose to multicultural environment.

Achievement in Short-term Training Abroad Program

<table>
<thead>
<tr>
<th>Department</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>B4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Science and Engineering</td>
<td>3</td>
<td>18</td>
<td>12</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Earth Resources, Marine and Civil Engineering</td>
<td>10</td>
<td>20</td>
<td>6</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Mechanical and Aerospace Engineering</td>
<td>17</td>
<td>21</td>
<td>6</td>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>Energy Science and Engineering</td>
<td>2</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Electrical Engineering and Computer Science</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Architecture</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>77</td>
<td>39</td>
<td>5</td>
<td>160</td>
</tr>
</tbody>
</table>
“Study in Illinois” Program for ME Students

✓ Special program for Mechanical Engineering Students
✓ 5 third-year students
✓ One month in March
✓ Labs in University of Illinois at Urbana-Champaign

Aims
✓ English language improvement
✓ Expose to a taste of research activities abroad with a host PI

Programs at School and Grad. School of Eng.

International Education Programs for Undergraduate School
◆ International Undergraduate Programs in English (IUPE)
◆ Mongolian Twinning Program (in Japanese)
◆ Vietnam Nuclear Energy Program (in Japanese)

International Education Programs for Graduate School
◆ International Graduate Courses (including all 12 departments)
◆ Double-Degree Program
◆ International Special Course of Environmental Systems Engineering
◆ Advanced Graduate Course on Molecular Systems for Devices

Programs for Supporting Foreign Students
◆ Asia Human Resources AQ Program (to pursue careers in Japanese companies)
Programs at School and Grad. School of Eng. (cont.)

Student Mobility Programs
◆ Student exchange
◆ Short-term Training Abroad Program for KU students
  ✓ ELEP
  ✓ QPEC
◆ “Study in Illinois” Program for KU ME Students
◆ Visit KU Program for Foreign High School Students

Programs for Supporting Professors
◆ English Language Instruction for Teaching in English (ELITE)
◆ Enhanced Education Program (EEP) supporting development of English-language teaching materials

Issues Associated with Internationalization

- How many students are we accepting students from abroad?
  ✓ Strict MEXT regulation of the number of students.
  ✓ Responsibility as one of Eight Universities in Japan.
- Are we introducing classes taught in English for Japanese students?
  ✓ Controversial issue given by university headquarter.
    » Japanese for all basic classes in undergraduate school
    » Some classes taught in English in graduate school
- How can we improve student’s proficiency in communication with foreign people in English?
  ✓ Enhance students’ motivation.
  ✓ Expose students to multicultural environment

Continue effort at keeping and stepping up the programs to give many chances to students.
Thank you