Introduction of United Nations/Japan Long-term Fellowship Programme on Nano-Satellite Technologies
Hosted by
Kyushu Institute of Technology, Japan
~Doctorate in Nano-Satellite Technologies (DNST)~

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Introduction of KIT
Kyushu Institute of Technology (KIT)

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1909</td>
<td>Founded as Meiji College of Technology (4-year, private)</td>
</tr>
<tr>
<td>1921</td>
<td>Became a national institution</td>
</tr>
<tr>
<td>1949</td>
<td>Renamed as Kyushu Institute of Technology</td>
</tr>
<tr>
<td>1986</td>
<td>Addition of Faculty of Computer Science and Systems Engineering</td>
</tr>
<tr>
<td>2000</td>
<td>Addition of Graduate School of Life Science and Systems Engineering</td>
</tr>
<tr>
<td>2004</td>
<td>Became a National University Corporation</td>
</tr>
<tr>
<td>2009</td>
<td>Celebration of 100th anniversary</td>
</tr>
</tbody>
</table>

4,400 Undergraduate students  
1,700 Graduate students  
370 Academic staffs
Kyushu Institute of Technology

- Located at Kitakyushu region
  - Population of more than 1 million
  - Cost of living is much lower than Tokyo

[Map showing the location of Kitakyushu relative to Tokyo]
Kyushu Institute of Technology

Wakamatsu – Life Science

10km

Tobata - Engineering

30km

Iizuka – Computer Science
Tobata Campus (Engineering)

- Mechanical and Control Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Applied Chemistry
- Material Engineering
- Systems Engineering
Iizuka Campus (Computer Science)

Computer Science and Electronics

Systems Innovation and Informatics

Mechanical Information Science & Technology

Bioscience and Bioinformatics

Artificial Intelligence
Wakamatsu Campus (Life Science)

Biological Functions Engineering
Brain Science
## International Exchange Partnerships

with 23 countries/regions and 61 universities/institutions

<table>
<thead>
<tr>
<th>Countries (Regions)</th>
<th># of partner institutions</th>
<th>Countries (Regions)</th>
<th># of partner institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>14</td>
<td>Taiwan</td>
<td>1</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>5</td>
<td>Malaysia</td>
<td>1</td>
</tr>
<tr>
<td>Korea</td>
<td>4</td>
<td>Bangladesh</td>
<td>1</td>
</tr>
<tr>
<td>Thailand</td>
<td>4</td>
<td>Pakistan</td>
<td>1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>4</td>
<td>Sri Lanka</td>
<td>1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3</td>
<td>Philippines</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>3</td>
<td>New Zealand</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>3</td>
<td>Italy</td>
<td>1</td>
</tr>
<tr>
<td>U.K.</td>
<td>3</td>
<td>Poland</td>
<td>1</td>
</tr>
<tr>
<td>France</td>
<td>4</td>
<td>Norway</td>
<td>1</td>
</tr>
<tr>
<td>Mongolia</td>
<td>2</td>
<td>Spain</td>
<td>1</td>
</tr>
<tr>
<td>Germany</td>
<td>2</td>
<td>Total</td>
<td>61</td>
</tr>
</tbody>
</table>
# International Students at KIT

Total of 219 international students as of October 2010

<table>
<thead>
<tr>
<th>Country (Region)</th>
<th>Number of Int’l students</th>
<th>Country (Region)</th>
<th>Number of Int’l students</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>118</td>
<td>U.S.A.</td>
<td>1</td>
</tr>
<tr>
<td>Korea</td>
<td>23</td>
<td>Taiwan</td>
<td>1</td>
</tr>
<tr>
<td>Malaysia</td>
<td>12</td>
<td>Myanmar</td>
<td>1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>11</td>
<td>Syria</td>
<td>1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>9</td>
<td>Mexico</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>9</td>
<td>Iran</td>
<td>1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>8</td>
<td>Honduras</td>
<td>1</td>
</tr>
<tr>
<td>Thailand</td>
<td>6</td>
<td>Philippines</td>
<td>1</td>
</tr>
<tr>
<td>France</td>
<td>5</td>
<td>Sri Lanka</td>
<td>1</td>
</tr>
<tr>
<td>Laos</td>
<td>3</td>
<td>Liberia</td>
<td>1</td>
</tr>
<tr>
<td>Nepal</td>
<td>2</td>
<td>Peru</td>
<td>1</td>
</tr>
<tr>
<td>Brazil</td>
<td>2</td>
<td>Total</td>
<td>219</td>
</tr>
</tbody>
</table>
## Housing of international students

<table>
<thead>
<tr>
<th></th>
<th>Rent (per month)</th>
<th>Tobata</th>
<th>Iizuka</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>For singles</td>
<td>JPY 5,900 (€55)</td>
<td>38</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>For couples</td>
<td>JPY 9,500 (€87)</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>For Families</td>
<td>JPY 14,200 (€129)</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>
Motivation

• KIT’s motivation for UN/Japan Long Term Fellowship
  – Contributing to humanity through space engineering education to international students and promotion of peaceful use of outer space
  – Recruiting excellent students from all over the world
  – Providing a multicultural learning environment to Japanese students
  – Strengthening Space Engineering researches
Introduction of Doctorate in Nano-Satellite Technologies (DNST) program
Space Engineering Research and Educations at KIT

• Space Engineering Education at Tobata Campus since 1993
  – Undergraduate (30 students/class) and graduate levels
• Laboratory of Spacecraft Environmental Interaction Engineering
  – Established in 2004
• Center for Nanosatellite Testing
  – Established in 2010
KIT satellite project

- KIT nanosatellite project
  - 20 graduate and undergraduate students working together
    - Responsible for all the processes
      - Conceptual study, design, fabrication, testing and operation
  - Official educational program for graduate student
    - Learn systems engineering and project management
    - Writing a Ph.D thesis
      - Extract a state-of-the-art research element from the project work

HORYU-I
(to be launched 2011)

HORYU-II
Center for Nanosatellite Testing

• Established in 2010
• Provides all the environmental test services except radiation for
  – Nanosatellite up to 50cmx50cmx50cm and 50kg
  – More than 2 million US$ worth equipments
• Reduce the development cost of nano-satellites while ensuring the reliability of the system
Background

- Interest in capabilities for basic space technology development
- Satellites affordable even to universities and smaller institutions
- Small space enterprises from University-based satellite projects
Background

• Presentation of UN Basic Space Technology Initiative (BSTI) at 27th International Symposium on Space Technology and Sciences, Tsukuba, Japan in 2009

• Mission
  – To enhance access to space application tools for sustainable development through building capacity in basic space technology

• Objectives
  – Respond to the growing interest in many countries to establish indigenous capacities in basic space technology
  – Promote international cooperation and information exchange in capacity building in basic space technology
  – Others

KIT answered the call for collaborations made by UN
Long-term Fellowship Programme

• Long-term fellowship to support students studying abroad and gaining experience through *on-the-job training (OJT)*.

• Reading books or attending lectures is not enough

• Experience the complete cycle of designing, building and testing a satellite
  – Even better with launching and operating

• Learn through the failures during the tests and the efforts necessary to correct the defects

• Learn to *think and be innovative*
  – Participate in a satellite project *as a team member not as a guest*
  – Experience necessary to *build a facility from scratch* in home country

  – *University-like environment* is more suitable than well-prepared comfortable institutions, such as space agencies or industries
On-the-Job Training

KIT can offer on-the-job training opportunities to those who want to start their own space program in their home country.
UN/Japan long-term fellowship

- United Nations/Japan Long-term Fellowship Programme on nano-satellite technologies
  - Doctorate in Nano-satellite Technologies (DNST)

- KIT provides financial support to students entering Doctorate programme (3 years) from developing countries or countries in economic transition
  - Extensive research opportunities in core technologies for nanosatellite system development
    - Especially infrastructure, such as testing
  - Participate in the KIT satellite project
    - Find a research topic for Ph.D. thesis
  - Doctorate degree (Doctor of Engineering) after completion of 3 year course work/research and successful defense of the Ph.D. thesis

- The first student to enroll in KIT on October 1, 2011
UN/Japan long-term fellowship

• Support by KIT
  – 2 students each year, 3 years for each student
  – Enrolment as a full-time Ph.D. candidate student after passing an examination by KIT faculties.
  – Exemption from the tuition and entrance fees
  – Room in on-campus dormitory (5,900 yen/month = 55 euro/month)
  – Living expense of 80,000 yen per month

• Support by UN
  – Presentation of the DNST programme to the UN Member States
  – Promotion of the DNST programme on the UNOOSA web site
  – Pre-selection of the candidate student (KIT will make the final selection.)
  – Payment of the travel expenses to KIT
How to apply?

• Application package is at
• For UN
  • Or Google “UN Japan space fellowship”
• For KIT
  •  http://cent.ele.kyutech.ac.jp/unitednations.html

The application deadline is April 30, 2011

For further detail
cho@ele.kyutech.ac.jp (KIT)
werner.balogh@unoosa.org (UN)
Conclusions

• United Nations/Japan Long-term Fellowship Programme on nano-satellite technologies
  – Provide the hands-on experience necessary to build capabilities in basic space technology, especially infrastructure building through testing of nano-satellites
  – Further worldwide nano-satellite development efforts

Goal

Promote the peaceful and innovative use of outer space with the participation of a larger number of countries for the benefit of humanity