An Introduction to Engineering Education on the KIT/KTC Campus with an Invitation to the 2018 International CDIO Conference

Kanazawa Institute of Technology
Kanazawa Technical College

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KIT Departments

Undergraduate Programs

■ **College of Engineering**
- Department of Mechanical Engineering
- Department of Robotics
- Department of Aeronautics
- Department of Electrical and Electronic Engineering
- Department of Electronics, Information and Communication Engineering
- Department of Information and Computer Science

■ **College of Environmental Engineering and Architecture**
- Department of Architecture Design
- Department of Architecture
- Department of Civil and Environmental Engineering

■ **College of Information Science and Human Communication**
- Department of Media Informatics
- Department of Management Systems
- Department of Psychological Informatics

■ **College of Bioscience and Chemistry**
- Department of Applied Chemistry
- Department of Applied Bioscience

KIT Departments

Graduate Programs

■ **Graduate School of Engineering**
- Mechanical Engineering
- Civil and Environmental Engineering
- Information and Computer Engineering
- Electrical Engineering and Electronics
- System Design Engineering
- Bioscience and Applied Chemistry
- Architecture
- Synthesized Engineering
- Business Architecture
- Systems for Intellectual Creation

■ **Graduate School of Psychology**
- Clinical Psychology

■ **Graduate School of Innovation Management**
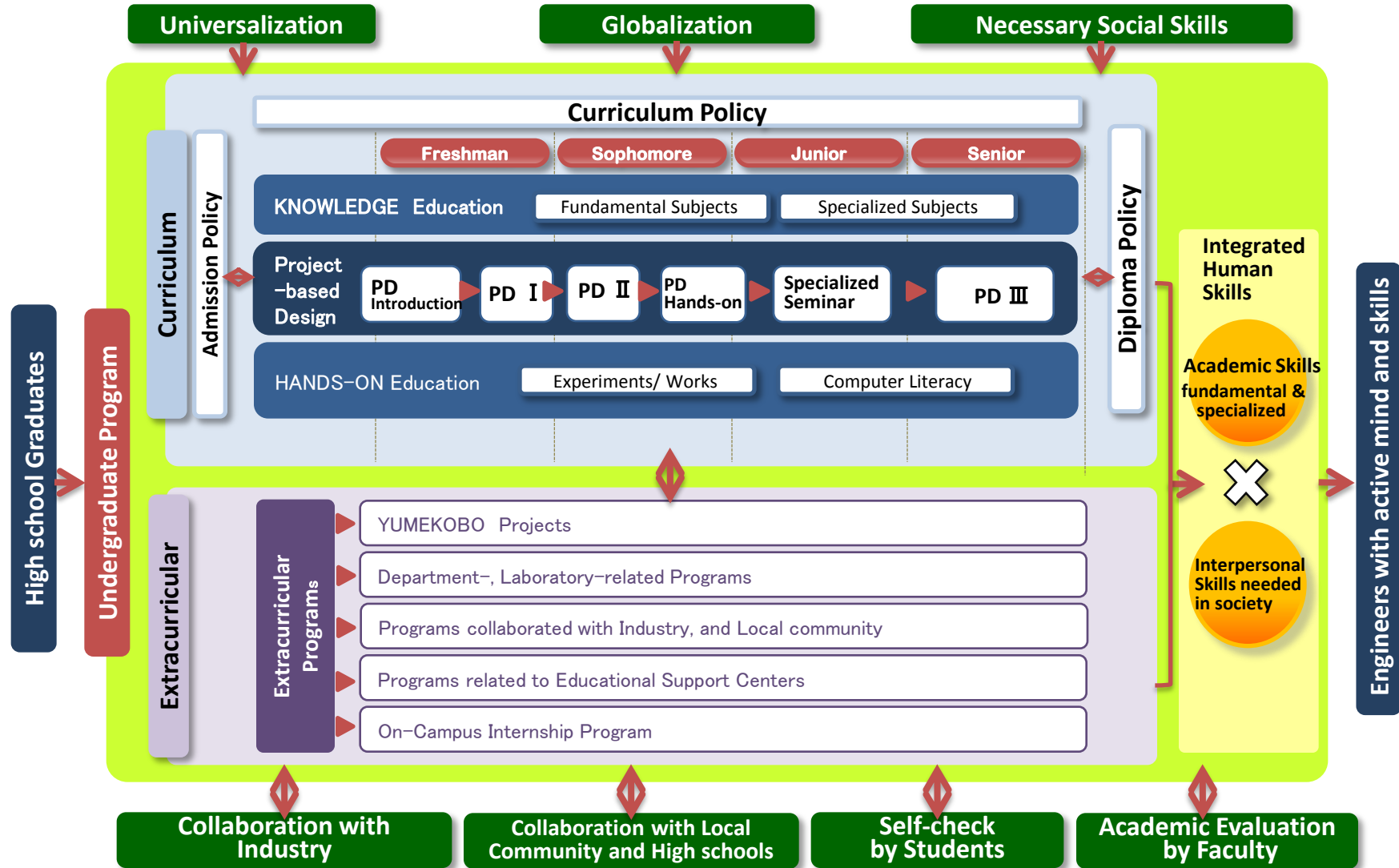- Department of Innovation Management

About KIT & KTC

- **Undergraduates : 6783**
- **Postgraduates : 469**
- **KIT Alumni : 61,598**
- **KIT Faculty : 350**

- **Students : 540**
- **KTC Alumni : 5975**
- **KTC Faculty : 60**

- **KIT + KTC Staff : 304**

Undergraduate Education (KIT)

Ⅱ

OVERVIEW

Ⅰ VISION&PLAN

Ⅱ IMPLEMENTAION

Ⅲ EVALUATION

Ⅳ ACTION

Synergetic Effect of Curriculum & Extracurricular Education

Universalization

Globalization

Necessary Social Skills

Curriculum Policy

Freshman	Sophomore	Junior	Senior

Admission Policy

Diploma Policy

Curriculum

KNOWLEDGE Education — Fundamental Subjects — Specialized Subjects

Project-based Design — PD Introduction → PD Ⅰ → PD Ⅱ → PD Hands-on → Specialized Seminar → PD Ⅲ

HANDS-ON Education — Experiments/ Works — Computer Literacy

High school Graduates

Undergraduate Program

Extracurricular

Extracurricular Programs

- YUMEKOBO Projects
- Department-, Laboratory-related Programs
- Programs collaborated with Industry, and Local community
- Programs related to Educational Support Centers
- On-Campus Internship Program

Integrated Human Skills

Academic Skills fundamental & specialized

Interpersonal Skills needed in society

Engineers with active mind and skills

Collaboration with Industry

Collaboration with Local Community and High schools

Self-check by Students

Academic Evaluation by Faculty

5

Welcome to KIT and KTC

In April 2016, Satoshi Osawa became the university president

The new president set a goal for the realization of "co-creation education capable of producing innovative design that spans generations, disciplines and cultures". Currently, he has plans to re-implement various policies.

1. Co-creation education spanning generations
2. Co-creation education spanning disciplines
3. Co-creation education spanning cultures

New Developments for the Next 50 Years

Co-creation education spanning generations

- Co-creation learning with members of society
- Social collaboration programs
- University Center of Community
- Center of Innovation

Co-creation education spanning disciplines

- "Cluster" laboratories
- Students teaching and learning from each other
- Education for Innovation

Co-creation education spanning cultures

- Classes adopting practical English
- Aiming to be a world hub of international innovation programs
- Welcoming foreign visitors to promote PD
- Overseas internships
- Development of dual and joint degree programs

Co-creation education spanning generations

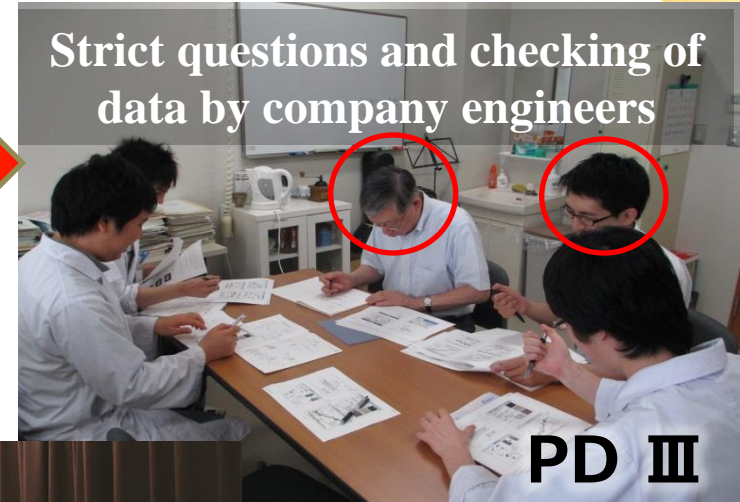## What communication ability is required by society?

Communication between students (same generation)

Communication with company engineers（communication transcending generations）

Industry-Academia Cooperative Education

Promotion of Collaborative Research

PD Ⅰ・Ⅱ

Strict questions and checking of data by company engineers

PD Ⅲ

Regional Collaboration Projects

Communication with local people and governments

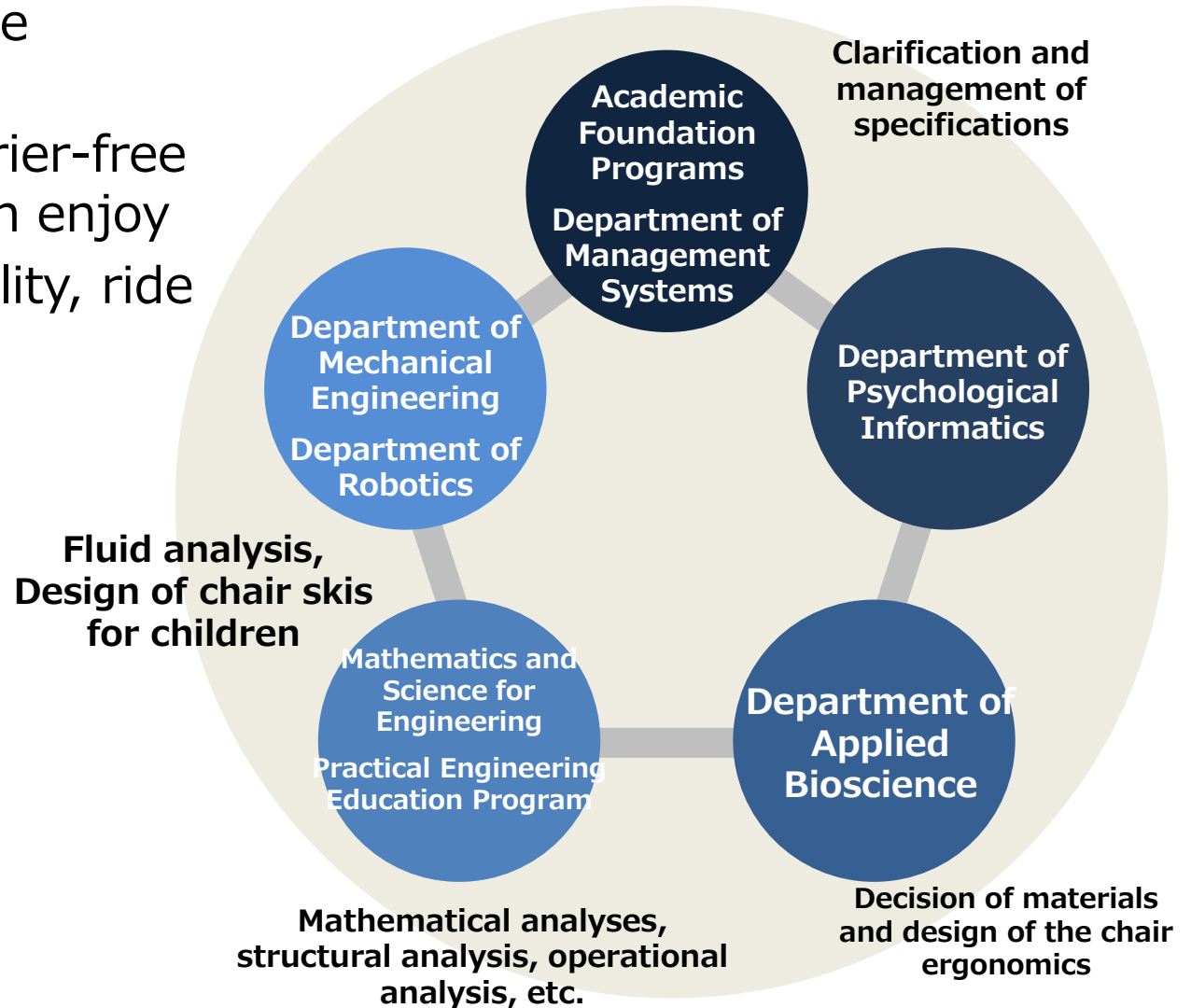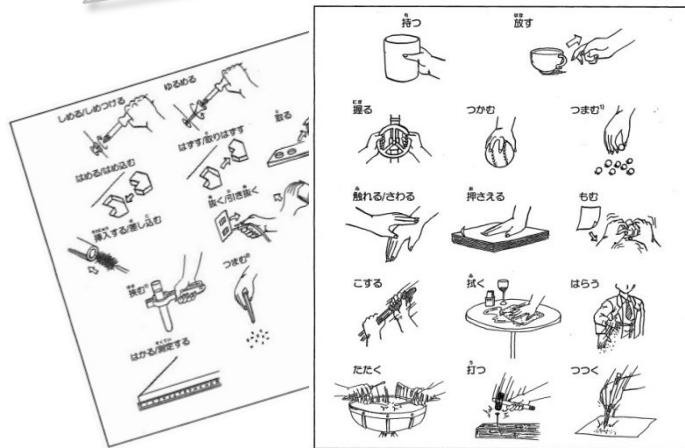# Co-creation education spanning disciplines

Theme : Chair Skis

- Development of chair skis to get a gold medal at the Paralympics
- Development of a barrier-free ride which children can enjoy
- Study of running stability, ride and chair

Study of fundamental technologies for the Paralympics

Academic Foundation Programs

Department of Management Systems

Clarification and management of specifications

Department of Psychological Informatics

Department of Mechanical Engineering

Department of Robotics

Fluid analysis, Design of chair skis for children

Mathematics and Science for Engineering

Practical Engineering Education Program

Department of Applied Bioscience

Decision of materials and design of the chair ergonomics

Mathematical analyses, structural analysis, operational analysis, etc.

Co-creation education spanning cultures

Manage classes with practical English across 50% of all subjects
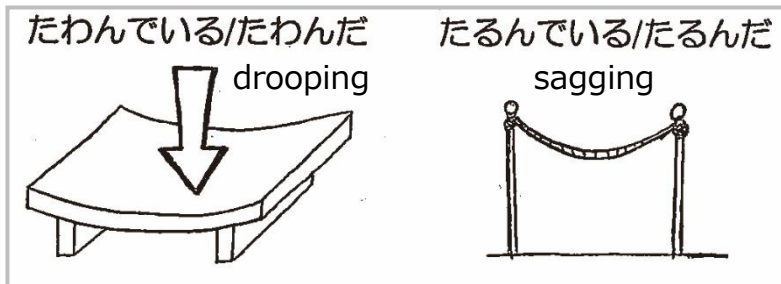（Planned implementation by 2020）

Aiming to be a world hub of international social innovation programs, we are establishing our campus to be accommodating for foreign visitors.

drooping

sagging

Example of Project Design I English Class

Summer lecture in 2016

Learning Express

Indonesia, Singapore, Vietnam

Students discover problems in the local development or environment of developing countries and propose solutions

Ho Chi Minh City University of Technology (HUTECH)

Vietnam

Overseas exportation of Project Design education

Introducing

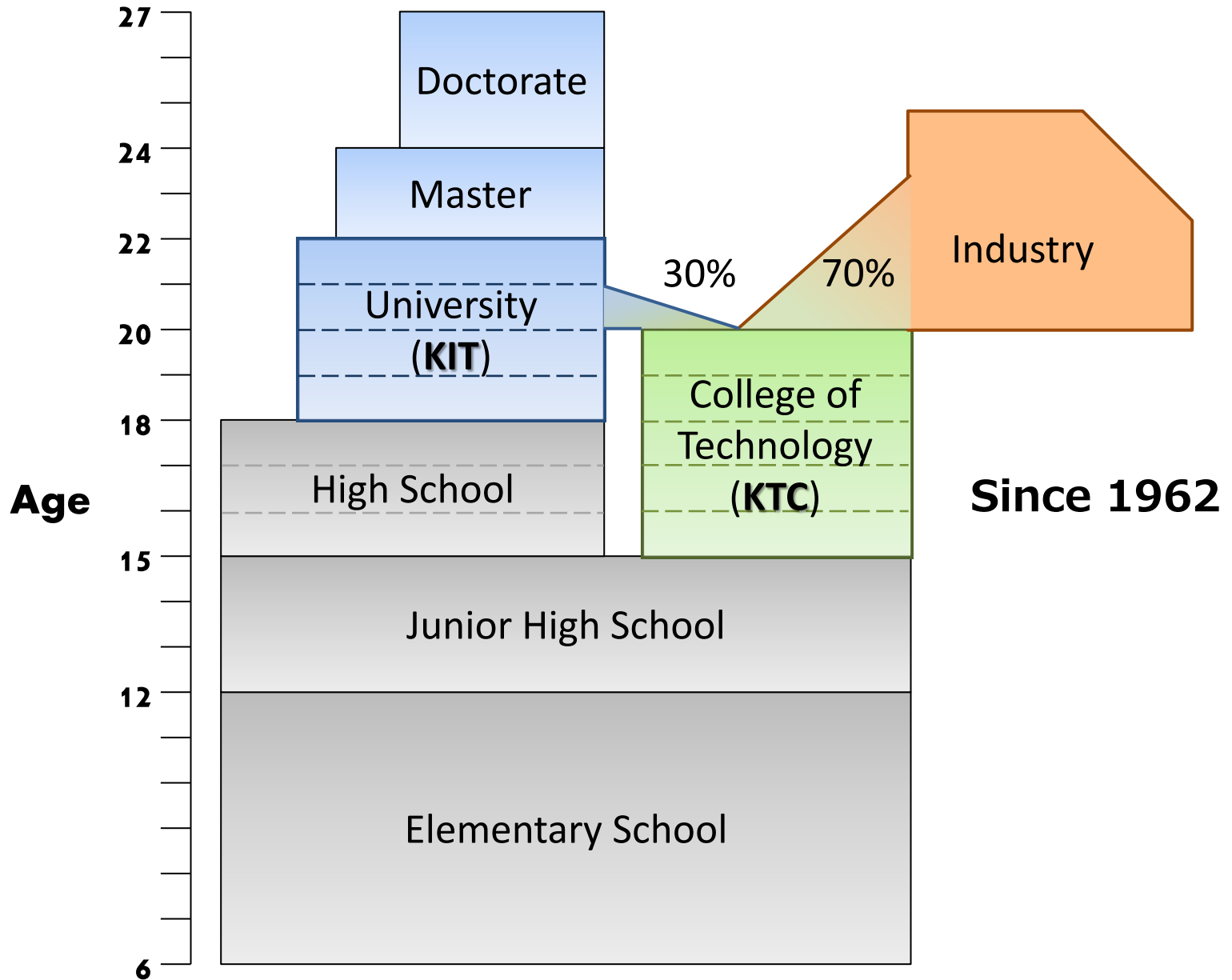**International College of Technology (ICT) Kanazawa**

Starting April 1st, 2018

Kanazawa Technical College (KTC)

will become ICT Kanazawa

Japan's Colleges of Technology

Age

- 27 — Doctorate
- 24 — Master
- 22 — University (KIT)
- 20 — 30% / 70%
- Industry
- College of Technology (KTC) — Since 1962
- 18 — High School
- 15 — Junior High School
- 12 — Elementary School
- 6

Changing from KTC to ICT

Kanazawa Technical College

120 Incoming Students

Years **1 – 5** @ Kanazawa

International College of Technology

90 Incoming Students

Years **1 – 2** @ Hakusan
Year **3** @ Otago Polytechnic
Years **4 – 5** @ Kanazawa

Changing from KTC to ICT

Kanazawa Technical College

3 Departments:

- Electrical & Electronic Engineering
- Mechanical Engineering
- Global Information & Management

International College of Technology

1 Department:

- Science and Technology

4 Tracks (from year 3):

- Electrical Engineering
- Mechanical Engineering
- Information Frontier
- Applied Chemistry

In a single, integrated department students will foster:

– Appreciation for diverse cultures & values
– English communication ability
– Engineering design skills
– Mastery of the CDIO process

	Yr Lvl
KIT (Master)	2
	1
KIT (Undergrad)	4
	3
ICT Kanazawa	5
	4
	3
	2
	1

KIT (Master) + KIT (Undergrad): **4**

ICT Kanazawa: **5**

5 + 4

Integrated education centered on **Project-based learning** & **English**

International College of Technology Kanazawa

	Yr Lvl
KIT (Master)	2
	1
KIT (Undergrad)	4
	3
ICT Kanazawa	5
	4
	3
	2
	1

Years 1 – 2

Hakusan Campus

Residential learning community
Preparation for studying in English
Projects for the local
community/environment

	Yr Lvl
KIT (Master)	2
	1
KIT (Undergrad)	4
	3
ICT Kanazawa	5
	4
	3
	2
	1

Year 3

Dunedin, New Zealand
Study abroad @ Otago Polytechnic
Functional & technical English
STEM subjects with
Engineering Design

International College of Technology Kanazawa

	Yr Lvl
KIT (Master)	2
	1
KIT (Undergrad)	4
	3
ICT Kanazawa	5
	4
	3
	2
	1

Years 4 − 5

Kanazawa Campus

Specialized subjects in English
Interdisciplinary team projects
In collaboration with KIT

	Yr Lvl	
KIT (Master)	2	University Years
	1	
KIT (Undergrad)	4	
	3	
ICT Kanazawa	5	
	4	
	3	
	2	
	1	

KIT Campus

Cross-disciplinary study
Academia-industry collaboration
Advanced research topics

ICT Educational Mission

"Leaders of Global Innovation"

- Personal qualities as a leader that contributes to society
- Communication ability for acting on a global scale
- Superior scientific and technological skills worthy of an innovator

ICT Competencies (Graduate Attributes)

Learning methods in classes and extracurricular activities will strengthen:

- Boldness for innovation
- Sense of duty to society
- Integrity as a leader
- Team collaboration skills
- Sense of identity with appreciation for diversity
- Ability to impress upon others
- Capacity to create value
- Scientific thinking across contexts
- Attitude for continuous learning

14th International CDIO Conference in Kanazawa 2018

"Innovations in Engineering Education"

June 28 – July 2, 2018

Call for Papers: September, 2017