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# **Nuclear human resources development of JAEC/NuTEC in cooperation with universities**

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# JAEA Research Centers in Japan

(Number of staff)

Total staff is about  
4,000 in 2009.

**Tono** (60)

High-level radioactive-  
waste management



**Horonobe** (40)

High-level radioactive-  
waste management



**Aomori** (40)

Nuclear reactor dismantle, Ocean  
research, ITER support



**Tsuruga** (350)

FBR cycle study, Monju reactor study,  
Decommissioning of Fugen reactor



**Tokai** (1,860)

Head office, Nuclear safety, Basic research,  
Neutron study, High-level waste management, FBR  
fuel development, **Human Resources Development**  
(nuclear/radiation training),



**Ningyo** (80)

Decommissioning of U-enrichment  
facility



**Kansai** (110)

Syncro-radiation beam study



**Oarai** (590)

FBR cycle development, HTTR, JMTR



**Tokyo** (150)

Administrative office,  
Computer science

**Takasaki** (110)

Charged particle beam  
application study



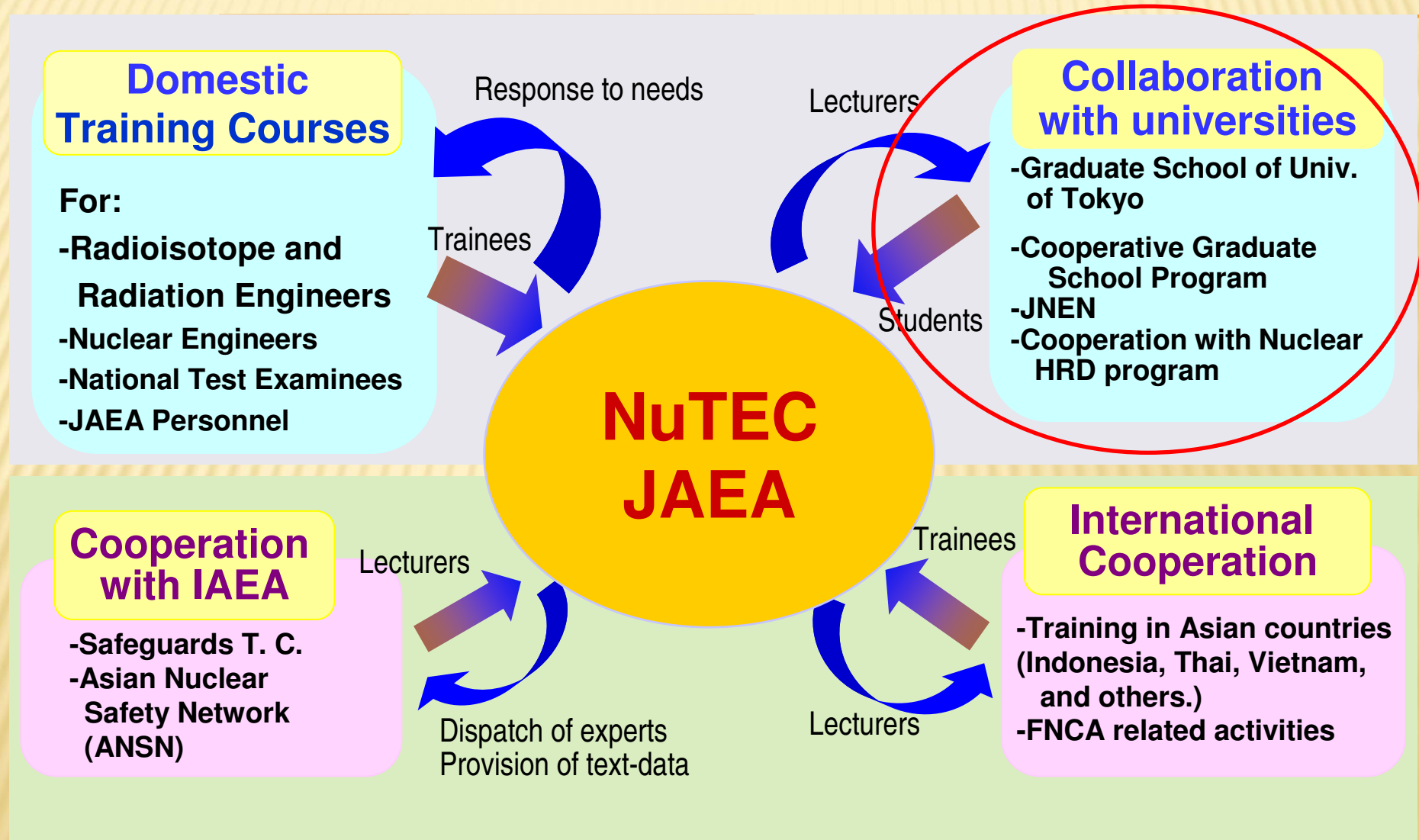
**Naka** (220)

Fusion reactor study, ITER  
related study, Plasma physics,





# Outline of NuTEC Activities



# Cooperation with universities

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## 1. Cooperation with Graduate School of University of Tokyo

- Nuclear Professional School (at Tokai), and Department of Nuclear Engineering and Management (in Tokyo) (both started on April 1, 2005)
- Effective use of facilities and human resources of JAEA
- About 140 JAEA staff dispatched, including 8 visiting Professors

## 2. Cooperative Graduate School Program

- Visiting Professors(55 visiting professors) from JAEA for 15 universities
- Effective use of facilities and human resources at JAEA

## 3. Japan Nuclear Education Network (JNEN)

- JNEN started in 2007 as a new distance learning system connecting JAEA and universities; 3 universities in 2007 and 6 univ. in 2009 .

## 4. Cooperation with Nuclear HRD Program

- MEXT and METI initiated Nuclear HRD Program (2007) to support nuclear related universities and technical colleges
- About half of selected universities and colleges required cooperation of JAEA, such as dispatch of lecturers, use of research reactors for experiments, and technical tour.

# Lectures, Exercises, Experiments at NPS/U of T

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Radiation Safety  
Nuclear and Radiation Detection  
Nuclear Law  
Reactor Physics  
Nuclear Thermal hydraulics  
Nuclear Fuel and Materials  
Nuclear Structural Mechanicals  
Nuclear Fuel Cycle  
Nuclear Safety  
Nuclear Power Plants  
Maintenance of Nuclear Plants  
Radioactive Waste  
Risk Perception and Communication  
Law for Engineers  
Human Management  
Special Lecture on Nuclear Issues  
Reactor Design  
Radiation Shielding  
Radiation Application

Nuclear Crisis Management  
Exercise of Nuclear Law  
Ethics for Engineers  
Exercise of Radiation Safety and Radiation Detection  
Exercise of Reactor Physics  
Exercise of Nuclear Thermal Hydraulics and NP  
Exercise of Structural Mechanics  
Exercise of Nuclear Fuel, Materials and Fuel Cycle  
Exercise of Nuclear Safety and Analysis  
Exercise of Core Design  
Exercise of Maintenance Engineering  
Exercise of Radiation Shielding  
Exercise of Radioactive Waste  
Exercise of Communication, Risk and Human Management  
Exercise of Special Nuclear Subjects  
**Nuclear Experiments.1 (summer semester)**  
**Nuclear Experiments.2 (winter semester)**  
Exercise of Reactor Operation, Inspection and Testing  
**Internship Experiments (summer vacation period)**

(Experiments 1&2 are conducted mainly at JAEA, dispatching totally about **100 JAEA staff**, in addition to the JAEA lecturers of about **100 staff**.)



# Cooperative graduate school program with domestic universities

Universities/Colleges (17 schools)	Date of the (first) agreement
University of Tsukuba (g)	31 May 1994
Tokyo Institute of Technology (g)	3 July 1995
Tohoku University (g)	1 Sep 1995
Ibaraki University (g)	11 May 1996
Utsunomiya University (g)	1 Apr 1997
Hyogo University (g)	22 Sep 1999
Gunma University (g)	1 Apr 2001
Okayama University (g)	30 Mar 2001
Kyoto Sangyo University (g)	23 May 2001
Kanazawa University (g)	1 Apr 2002
University of Fukui (g)	1 Apr 2004
Chiba University (g)	1 Apr 2006
Kansei Gakuin University (g)	13 Feb 2007
Hokkaido University (g)	1 Mar 2007
Doshisha University (g)	3 Aug 2009
Fukui University of Technology (u)	23 Feb 2007
Tsuyama National College of Technology	8 Oct 2008

(g): graduate universities

(u): undergraduate university

Additionally, in the FY 2009, joined Waseda University and Tokyo Metropolitan University. 6

# Japan Nuclear Education Network (JNEN)



Tokyo Institute  
of Technology

University  
of Fukui



Kanazawa  
University

Ibaraki  
University

Network

Okayama  
University

Osaka  
University



(Experiment at JAEA site)

**NuTEC/JAEA**  
(Hub center)  
At Tokai and Tsuruga



(JNEN started in 2007)



# Summary

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JAEA/NuTEC has been carrying out cooperation in the field of **nuclear human resources development with universities** of Japan, which include cooperation with;

- 1) University of Tokyo, especially for the education at the Nuclear Professional School,
- 2) Cooperative graduate school program with domestic universities,
- 3) Japan Nuclear Education Network (JNEN), and
- 4) Nuclear HRD Program by MEXT and METI of Japan.

The demand of nuclear HRD has been increasing in the recent years due to expanding interest for the nuclear energy in the years of so called “nuclear Renaissance.” To meet the demand, JAEA/NuTEC has been trying to improve and expand the **nuclear HRD activities through the cooperation with universities** in addition to general domestic and international cooperation.

Thank you