



**Inter-University Exchange Project**

**International Cooperative Educational Program  
using Dual Internship on Multidimensional Campus**





## *Greetings*

As the long-drawn-out COVID-19 pandemic finally began to show signs of easing, NUT's application for the "Inter-University Exchange Project: Support for Creation of Inter-University Exchanges in the Indo-Pacific Region" in FY2022 was accepted by Japan's Ministry of Education, Culture, Sports, Science and Technology. Our program, entitled "International Cooperative Educational Program using Dual Internship on Multidimensional Campus", will establish a multidimensional campus (XC) that effectively combines face-to-face exchanges, remote exchanges, and virtual exchanges, as well as create an environment that enables students from our university and partner universities in India and the UK to interact at any time and location. Through education and research exchanges on advanced technologies, this program aims to develop leading engineers who can perform at the global level by cultivating practical and creative skills, and enhancing their ability to contribute to Sustainable Development Goals (SDGs).

Our partner universities in this endeavor are the University of York in the UK and the Indian Institute of Technology Madras in India. The three universities will participate in mutual exchanges in the XC on the common themes of next-generation electric vehicles (in which both partner universities are engaged in research and development) and digital transformation (DX) manufacturing (in which our university excels). Of course, it will also be possible to interact on other topics. Within the XC, students will experience their first interactions as face-to-face exchanges in internships or workshops. For subsequent interactions, students will engage in multiple internships (i.e., dual internships) using face-to-face, remote, or virtual methods.

I hope that students and staff who are interested in exchanges with India and the UK will actively participate in this program with the aim of improving their own skill set so that they can play active roles in a global society. Although NUT's international exchanges have been heavily suppressed by the COVID-19 pandemic, this program may help us to revitalize these exchanges to a level higher than ever before. I also look forward to people from relevant companies engaging in this program through internships and collaborative research that support the educational activities of our students.



Vice President  
(International Relations and NUT Alumni)

**TAKAHASHI Osamu**

## *What is the Inter-University Exchange Project?*

The Inter-University Exchange Project was launched by the Ministry of Education, Culture, Sports, Science and Technology in FY2011 to foster the development of human resources capable of playing an active role at the international level, as well as to strengthen the global developmental capabilities of university education. Specifically, this project aims to support the mechanisms for international educational collaborations with universities in designated countries and regions that conduct overseas study programs for Japanese students and undertake the strategic acceptance of international students to Japanese universities while ensuring the quality of higher education.

NUT's "International Cooperative Educational Program using Dual Internship on Multidimensional Campus"—conducted in collaboration with the University of York and the Indian Institute of Technology Madras—was selected for the FY2022 Inter-University Exchange Project under the "Support for Creation of Inter-University Exchanges in the Indo-Pacific Region" initiative.

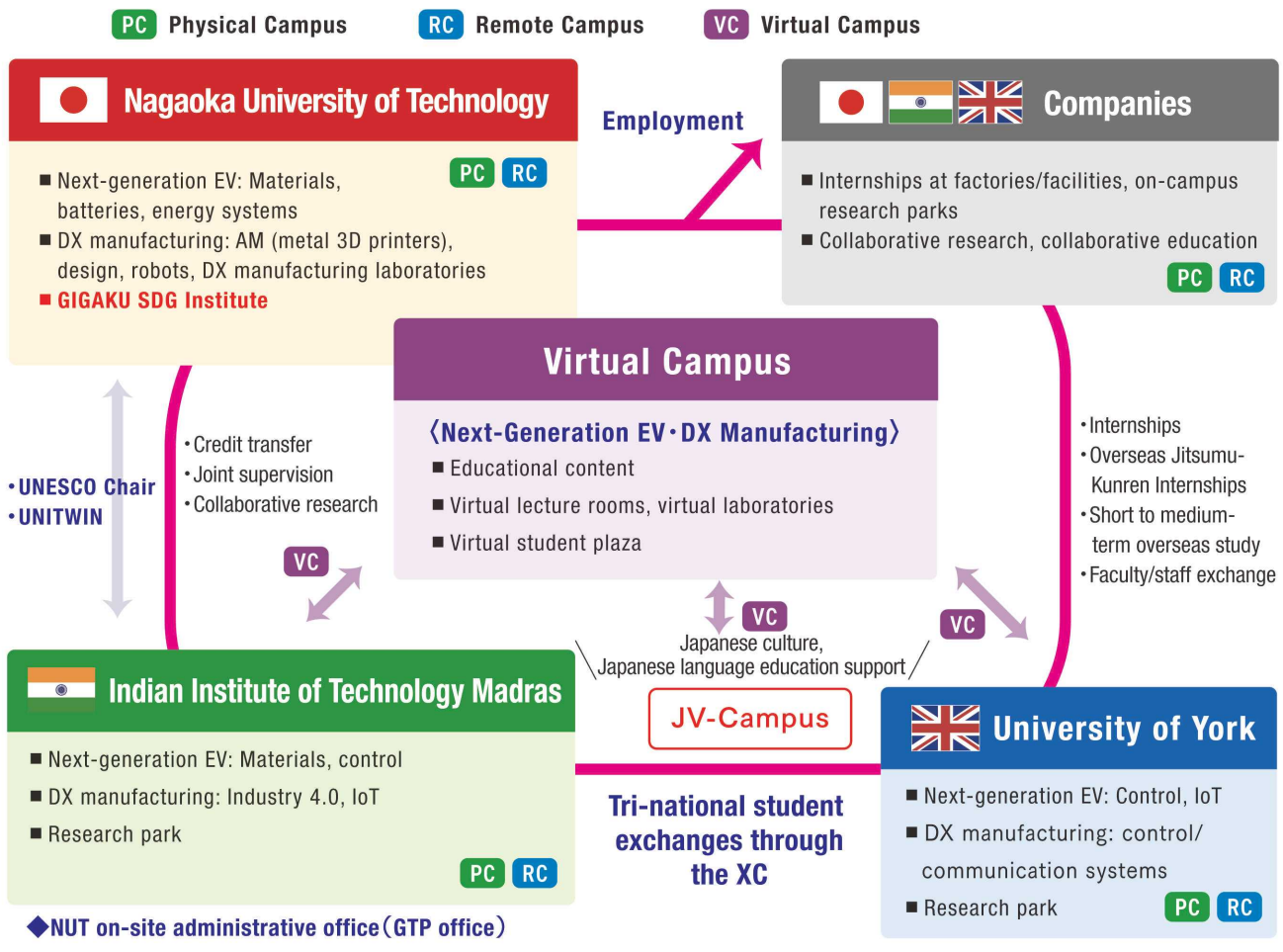
This represents the third time, following FY2014 and FY2015, that our application has been accepted for this project.



## // Program Aims and Overview //

This program will establish a multidimensional campus (XC) that will not only allow students and staff to engage in face-to-face exchanges at partner universities and companies, but will also enable mutual conversations through remote exchanges via the internet connecting all participating universities, as well as facilitate virtual exchanges that students can freely access. By effectively combining these modes of communication, this program will create an environment that enables students from our university and partner universities in India and the UK to interact at any time and location.

The program will also implement dual internships (combining different locations and multiple content) and cooperative internships for Japanese students and international students.



## // Global Human Resource on the Program //



- ▶ Practical and creative abilities that can generate innovation
- ▶ Will to contribute to the actualization of sustainable societies (SDGs)
- ▶ Ability to respond flexibly to social changes from a global perspective
- ▶ Leadership and management skills

**Development of leading engineers who can play active roles at the global level**





# Four Core Initiatives

## 1 Multidimensional Campus (XC) Construction

### Multidimensional Campus (XC) Overview



Students can select a campus, and participate in multiple internships or acquire credits under the selected campus environment.

#### Physical Campus (PC)

- Company internships
- Research internships
- Collaborative research, collaborative education
- Workshops

#### Remote Campus (RC)

- Remote internships
- Remote research guidance
- Remote lectures, experiments/training
- Remote Joint seminars
- JV-Campus educational content

#### Virtual Campus (VC)

- Virtual student plaza
- Virtual lecture rooms
- Virtual laboratories
- Entrance to the JV-Campus (Expansion to non-associated universities)

### Dual internships

(combining different locations and multiple content)

## Establishment of a multidimensional campus (XC) that combines face-to-face, online, and virtual types of campuses

### Face-to-Face Physical Campus (PC)

#### Physical university campuses, internship host companies

Conducting education and research activities at universities, as well as internships and overseas Jitsumu-Kunren internships at companies.

### Online Remote Campus (RC)

#### Creation of an international network that connects the three partner universities and cooperative companies through the internet

By linking all partners and collaborators through the internet, education and research activities will be driven forward using online content, digital teaching materials, and remotely operated equipment while students and staff remain on site.

### Virtual Virtual Campus (VC)

#### Lecture rooms and laboratories within cyberspace

Establishment of virtual lecture rooms and virtual laboratories that students can access at any time and from any place, thereby enabling them to learn, attend seminars, and interact with other students and teachers in physically different locations.



Physical Campus (PC)



Remote Campus (RC)



Virtual Campus (VC)



## 2 Development of Educational Content, Planning and Management of Educational Events

Each university will develop content that can be utilized in online lectures based on their independently developed teaching materials on next-generation EV and DX manufacturing, and facilitate their application in the remote and virtual campuses.

Students will experience practical training, seminar participation, and workshops on DX technology–implemented manufacturing equipment. In addition, the program will hold international conferences in which students take the initiative in planning, management, and participation.

## 3 Quality-Assured Human Resource Development, Educational Program Improvements, and Lateral Development Through the Multidimensional Campus (XC)

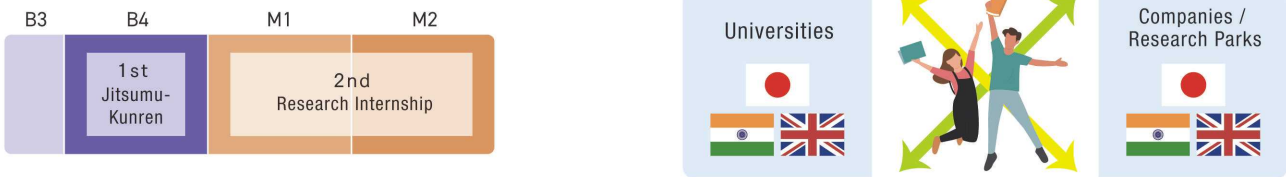
The establishment of a multidimensional campus (XC) will provide common training for students in the partner universities. Credit transfer systems and joint supervision systems will also be established to facilitate the development of a cooperative educational program.

## 4 Dual Internships/Cooperative Internships for Japanese Students and International Students

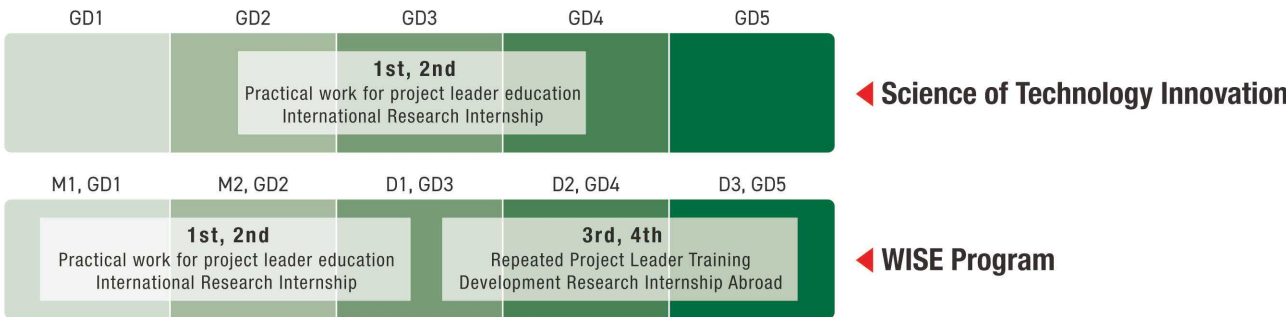
This program offers dual internships to NUT students, which combine different content and different locations, such as facilities/research institutes within the hosting universities and companies in Japan and overseas. Each internship will adopt a cooperative style in which Japanese students dispatched from our university will work together with international students in the partner university to tackle research tasks. This will raise the educational effectiveness for both the Japanese students as well as the international students providing support. Furthermore, courses that correspond to the students' enrolled programs will be prepared by combining pre-existing internship-related subjects.

For students in the partner universities (international students), company-based internships will be integrated into the training programs by applying the schemes fostered through our long history of hosting international students.

### Undergraduate + Master's Program



### 5-year Integrated Doctoral Program







## // Introduction to the Partner Universities //



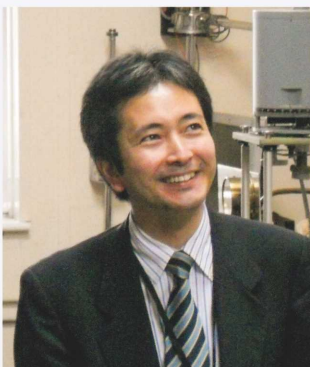
### University of York

The University of York was established in 1963, and the quality of its research and education is highly regarded both domestically and abroad. It ranks within the top 20 universities in the UK, and is one of 24 public research universities that constitute the prestigious Russell Group. At the international level, the University of York ranked 139th in the 2023 World University Rankings published by Times Higher Education. The university is situated on a beautiful campus with a lake surrounded by greenery, and is walking distance from the city center of York in North Yorkshire. There are 11 colleges, with approximately 22,000 enrolled undergraduates and postgraduate students. All students in the University of York are members of the college system, and can experience the cultural atmosphere and sense of community in the vibrant city of York.

In July 2010, NUT signed an academic exchange agreement with the University of York. Since then, we have conducted student exchanges (including dispatching students for the overseas Jitsumu-Kunren internship), staff exchanges, collaborative research, and joint authorship of scientific papers.



### A Message from Professor Atsufumi Hirohata, University of York



In rapidly globalizing world today, there is a increasing need for scientists and engineers who can demonstrate their abilities in a diverse variety of environments. We have sought to establish an international exchange hub in the UK with a focus on the field of spintronics, and have hosted more than 30 people each year. NUT has been a main exchange partner for over 10 years, and I am greatly looking forward to expanding this relationship not only in research, but also in educational and administrative exchanges through this program. In particular we eagerly anticipate the building of complementary relationships in robotics and next-generation communication technologies.

In this program, we aim to simultaneously provide an advanced educational environment at three locations together with the Indian Institute of Technology Madras, and to produce industry-oriented personnel at York—the most historic city in the UK. I hope that being on a safe and pleasant campus where you can use the Japanese language if needed, you will be able to develop the fortitude to continue challenging yourself in new environments. I am greatly honored to be able to participate in this meritorious program to the best of my ability.



## // Introduction to the Partner Universities //



### Indian Institute of Technology Madras

The Indian Institute of Technology Madras (IITM), which was formally inaugurated by the Union Minister for Scientific and Cultural Affairs in 1959, is one of 23 Indian Institutes of Technology (IIT). It is a nationally important research institute, and is also internationally recognized for its high standards of research. The university has a student enrollment of approximately 10,000, of which 70% are postgraduate students.

In January 2000, NUT entered into an academic exchange agreement with IITM. For over 20 years, we have made advancements in collaborative research, and also conducted active exchanges, such as implementing the overseas Jitsumu-Kunren internship for 4th-year undergraduates. Our universities participated in the Re-Inventing Japan Project (India) “Cooperative Engineer Education Program with South Indian Universities based on the Long-Term Internship Experience” between 2014 and 2018, during which time we dispatched a total of 47 Japanese students and hosted 43 Indian students.

There is a Japanese coordinator stationed at an NUT on-site administrative office within the IITM campus who promotes mutual exchanges among students and researchers, and also supports the reception and dispatch of Jitsumu-Kunren students and internship students.



### A Message from Professor Rajappa Gnanamoorthy, Indian Institute of Technology Madras



The world has high expectations for academia to make significant research contributions to sustainable development in various engineering fields, and this has attracted the attention of policymakers from across the globe. Researchers from different parts of the world must work together for the well-being and prosperity of future generations.

IITM is actively advancing international cooperative activities through new concepts and strategies that are currently in progress under the Indian government’s Institutes of Eminence scheme. As the principal coordinator of a research center that is exploring the broad fields of sustainable materials and sustainable manufacturing aimed at sustainable mobility, I am pleased to play an active role in international cooperation and collaborative research through this program.





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