Our Future Vision

Basic Policy

Around 80% of the students at Nagaoka University of Technology (hereinafter referred to as "NUT") are those transferred from the main courses of KOSEN (National Institute of technology) to the third year of the university. Since the inception of the university, we have produced human resources who play active roles in industries and research institutions by providing consistent education from the undergraduate courses to the master's programs at the graduate school.

We have anticipated the arrival of the era of globalization since the 1990s and proactively accepted international students, not only from Europe but also from developing countries in Asia, Latin America, and Africa, which will be the manufacturing bases of the future. We have been building a network of global technical education through collaborations with core universities in those countries. In the 2010s, we developed practical education for world-leading global engineers based on our network with KOSEN throughout Japan and partner universities abroad through the Top Global University Project. Based on these achievements, as a university that provides leadership in the SDGs (Sustainable Development Goals), UNESCO certified NUT as a GIGAKU SDG Institute in 2018. The United Nations also appointed us as a hub university for SDG Goal 9, "Build resilient infrastructure, promote sustainable industrialization and foster innovation." Furthermore, in recognition of our activities since then, the United Nations has also requested us to play an active role as a hub university for three further years from June 2021.

Aiming for 2030, we will build a new education and research system that forms the core of the efficient educational transition from KOSEN to NUT, and produce leading engineers equipped with practical and creative abilities for the pursuit of innovations to contribute to the SDGs and the aspiration to realize a sustainable society. At the same time, we will promote advanced research and technological development to achieve the SDGs and connect them to the sustainable development and improvement of the profile of industrial cluster regions in Japan and abroad. We will also seek to reform and improve the efficiency of our institutional and business operations and establish a diverse and stable financial base under the leadership of the President. Furthermore, we will promote the digitalization of our campus, including the use of information technologies, to make our operations more productive. To achieve the above basic policy, we will systematically promote the following activities related to education, research, social cooperation, globalization, university management (organizational/business management, finance), and the digitalization of our campus.

As mentioned above, we mainly accept students from KOSEN across Japan. As it is an essential mission for us to promote the revitalization of local industries based on our network with KOSEN, we regard the area around the university and the areas around the KOSEN located in industrial cluster regions throughout Japan as "the regions", we refer to those areas "the regions" in "Our Future Vision."

Education

The development of human resources with practical skills in information technologies and cross-disciplinary/interdisciplinary knowledge

We aim to develop engineers who can contribute to the achievement of the SDGs and play an active role at a global level with practical and creative abilities. In particular, we will produce "STEM human resources" who can effectively utilize data science and AI, and have cross-disciplinary and interdisciplinary knowledge that can contribute to the realization of Society 5.0.

They will also be able to respond to social changes from a broad perspective and demonstrate management skills. Therefore, in addition to industry-academia-government collaborative education, we will consolidate the fields of engineering and create new educational programs by introducing major/minor courses and a technological innovation frontier course in the reorganization starting from 2022. At the same time, we will develop recurrent education for working adults and an education and research environment where no one will be left behind.

Action Plan 1

1. The Introduction of a New Educational Program for the Systematic Study of Interdisciplinary Fields

In the undergraduate program, we will introduce major and minor courses as a new educational program and prepare an educational environment for our students to acquire an overall understanding of interdisciplinary fields beyond the conventional engineering field. In this way, students will be able to gain knowledge of different fields according to their individual preferences while deepening the understanding of their specialized fields. We will also help our students acquire the necessary qualifications to become STEAM professionals through liberal arts education in the technological innovation frontier course we will newly set up.

2. The Development of High-Quality STEM Human Resources Who Have Practical Skills in Information Technologies

In the undergraduate program, we will develop STEM human resources through the information literacy course that will be compulsory for all our students. In the master's program, we will develop high-quality STEM human resources who have practical skills in information technologies by setting up new courses whose subjects include mathematics, data science, and AI, which will help our students enhance applied skills in their specialized fields.

3. The Promotion of Industry-Academia-Government Collaborative Education and Research and the Development of Human Resources with Doctoral Degrees Who Can Play Active Roles in Various Fields

In the master's program, we will develop human resources equipped with practical and creative abilities through the use of internship courses, external guidance programs, etc., and by promoting industry-academia-government cooperative education through the participation of our students in joint research with businesses and off-campus practical training. In the doctoral program, we will develop human resources with doctoral degrees who can play active roles in various fields through the promotion of industry-academia-government cooperative education that encourages our students to participate in collaboration and joint research with businesses, local governments, and other universities utilizing external guidance programs. We will also promote the diversification of our students' career paths.

■ Education

4. Fostering Leaders in Solving Regional Issues and Developing Educational Contents for Working Adults

In our efforts to achieve the SDGs, we will foster leaders in solving regional issues through the enhancement of collaborative education for our students to work with various institutions, such as industries, local governments, KOSEN, and high schools and strengthen the recurrent education for working adults based on our specialized field of research and development. In order to respond to changes in industry and society, we will also develop new educational content for our students to systematically learn subjects in various fields, such as AI, mathematical data science, and safety/standardization, and provide education mainly to working adults. (→ Social cooperation 5)

5. The Development and Enhancement of an Educational Environment Where No One Will Be Left Behind

We will improve and enhance our consultation system by expanding the role of the Student Support Center, including online consultations, for our students to have a safe and comfortable learning environment regardless of their gender, nationality, age, or disabilities. Furthermore, we will proactively train and promote student accessibility leaders (those qualified by the Accessibility Leader Development Council) to utilize the abilities of our students in the support.

Research

The promotion of the development of advanced research/technologies and social implementation mainly in the fields of manufacturing and information technologies and the establishment of a research environment that can take advantage of the diversity of researchers.

We will contribute to the delivery of innovations to achieve the SDGs mainly in our specialized research fields of manufacturing and information technologies that support Society 5.0, such as materials science, control systems, green technologies, and research fields with high social needs. To this end, we will develop organization-to-organization joint research and further promote the social implementation of research results in collaboration with local governments and financial institutions. We will also diversify the career paths of young faculty members through cooperation and collaboration with industries and other institutions and establish a foundation on which a diverse range of human resources, including young, female, and foreign teachers, can play an active role.

Action Plan 2

1. The Enhancement of Technological Development Projects as Practical Research and the Rapid and Effective Delivery of Innovations

We will enhance practical research that exploits socially beneficial technologies through collaborative education with corporate engineers in technological development projects such as at the Technology Development Center and the Regional Disaster Prevention Practical Research Center. Furthermore, we will analyze accumulated big data by making the maximum use of information technologies, which will lead to the rapid and effective delivery of innovations.

2. The Identification of Long- and Short-term Regional Issues in Cooperation with KOSEN and the Promotion of Joint Research to Find the Solutions

We will identify the short- and long-term regional issues in Japan and abroad through interactive dialogues with businesses and promote joint research to find the solutions based on our specialized field of research and development and other research fields highly demanded in local communities at the Technological Collaboration Briefing Session we co-host with KOSEN (→ Social collaboration 3)

> Note: The Technological Collaboration Briefing Session is an activity to promote joint research and the development of human resources by matching the research and development needs in businesses with the research seeds at universities and KOSEN.

3. The Enhancement and Expansion of the Roles of Research through Remote and Shared Use of Equipment and the Sharing and Mutual Utilization of Educational Resources

We will promote remote use of research equipment with the Center for International Industry-Academia Collaboration as the base and expansion of the sharing and mutual utilization of educational resources to share intellectual resources with local governments, industries, universities/research institutions in Japan and abroad and enhance and expand the roles of research. (→ Social cooperation 4)

> Note: The Center for International Industry-Academia Collaborations consists of six divisions and aims to systematically promote education and research and the joint creation of regional research funds donated by industries through the cooperation between research institutions and businesses in Japan and abroad. Its main job is to supervise domestic and overseas industry-academia collaborations conducted at the university.

■ Research

4. Providing Diverse Career Paths to Support Young Researchers and Developing a Research Environment that Takes Advantage of the Diversity of Researchers

We will support the activities of young researchers through diverse career paths by introducing a new career-break system and allowing them to take advantage of the sabbatical training system, etc. We will also secure diverse human resources, such as faculty members who are young, female, or from abroad, and establish a foundation for their active roles through the projects by the Committee for the Promotion of Gender Equality and the tenure track system (the Top Runner Incubation Center for Academia-Industry Fusion). To achieve those objectives, we will promote various styles of learning and working that consider the work-life balance

> Note: The career-break system at NUT is a program that sends our researchers to education and research institutions and companies in Japan and abroad to engage in research and development activities for three months or more away from their works at the university, after which they can utilize the experiences for their career development.

Social Cooperation   Social contributions for the sustainable development of regional manufacturing cities

We will proactively utilize the network we have built between NUT and KOSEN throughout Japan and promote the sharing of research seeds and research equipment for the advancement of research levels to solve the various issues faced by local businesses. At the same time, we will help the advancement of domestic and foreign industries that take advantage of local characteristics by coordinating research with businesses, which will lead to the revitalization of local industries and the creation of new ones. Furthermore, we will seek to build and enhance free-address recurrent education for working adults and increase the number of adult graduate students. At the same time, we will develop such human resources and contribute to the creation of regional attractiveness to further respond to the demands from industry and society to adapt themselves to changes in the industrial structure in future society.

Action Plan 3

1. The Expansion of Development Bases Including Satellite Campuses in Japan that Form the Core of New Technological Development

To solve regional issues and achieve the SDGs, we will set up a system to propose a role model for regional revitalizations that takes advantage of local characteristics at the Center for International Industry-Academia Collaboration, collaborate with local governments, KOSEN, and regional industries, and expand the development bases, including satellite campuses in Japan, that will form the core of new technological development.

2. The Promotion of Education and Research Collaborations with KOSEN and Educational Collaborations with Elementary and Secondary Schools; the Enhancement of Education and Research Networks that Promote Co-creation with Society

We will seek to collaborate with the regions where KOSEN are located for the research funds donated by industries and promote education and research collaborations with KOSEN by enhancing the role of the Center for International Industry-Academia Collaboration, the promotion body for strengthening our cooperation with the local communities. We will also promote educational collaborations with elementary and secondary schools. Furthermore, we will strengthen the education and research networks that promote co-creation with societies in Japan and abroad by making the best use of our overseas partner universities that form bases for collaborations.

3. The Identification of Long- and Short-term Regional Issues and the Promotion of Joint Research to Find the Solutions

We will identify the short- and long-term regional issues in Japan and abroad through interactive dialogues with businesses and promote joint research to find the solutions based on our specialized field of research and development and other research fields highly demanded in local communities at the Technological Collaboration Briefing Session we co-host with KOSEN. (→Research 2)

4. The Strengthening and Expansion of the Roles of Research through the Remote and Shared Use of Equipment and the Sharing and Mutual Utilization of Educational Resources

We will promote the remote use of research equipment with the Center for International Industry-Academia Collaboration as its base and expansion of the sharing and mutual utilization of educational resources to share intellectual resources with local governments, industries, universities/research institutions in Japan and abroad and enhance and expand the roles of research. (→ Research 4)

■ Social Cooperation

5. Fostering Leaders in Solving Regional Issues and Developing Educational Contents for Working Adults

In our efforts to achieve the SDGs, we will foster leaders in solving regional issues through the enhancement of collaborative education for our students to work with various institutions, such as industries, local governments, KOSEN, and high schools, and strengthen the recurrent education for working adults based on our specialized field of research and development. In order to respond to changes in industry and society, we will also develop new educational content for our students to systematically learn the subjects in various fields, such as AI, mathematical data science, and safety/standardization and provide education mainly to working adults. (→ Education 4)

Globalization   The Development of Globalization Built on a Strong Network with Overseas Universities and Industries

As a leading global center for education and research that leads the field of technology, we will proactively utilize our strong network with overseas universities and industries we have built and develop an education and research model and an industry-academia-government collaboration model at industry-academia-government fusion global campuses established in strategic next-generation overseas regions. We will also promote the international mobility of students and faculty members.

Action Plan 4

1. Improvement of Communication Skills, Including Foreign Language Skills, of Students and Faculty Members

Improving the communication skills, including foreign language skills, of students and faculty members is essential to the globalization of universities and the promotion of global human exchange. We will improve the four skills of English in a well-balanced manner by incorporating presentations, listening exercises, extensive reading and listening, close reading, and essay writing into our English classes. At the same time, we will actively provide opportunities for our students to use English through pair and group activities in class and extracurricular language training (both on campus and overseas), etc.

2. The Development of Practical and Creative Engineers; the Expansion and Enhancement of the Support for International Students to Invite Students from Diverse Countries

We will enhance our quality-guaranteed education and research programs implemented in collaboration with our overseas partner universities, such as the Twinning Program, the Double Degree Program, and the Cotutelle Program, motivate our students to study abroad, and produce practical and creative engineers who can play an active role in the global environment. We will also accept international students from various countries by enhancing and strengthening cooperative education and research programs and the support for international students, such as residence-related procedures, lifestyle counseling, and provision of various information on campus.

3. The Development of Programs for Overseas Experience Programs and a Model for Education and Research in the Science of Technologies for Next-Generation Strategic Regions

We will develop our distinctive educational programs for students to gain experience abroad, such as overseas *Jitsumu-Kunren*(long-term internships) and research internships. We will also develop an education and research model in the science of technologies in new next-generation strategic regions (Africa, Latin America, Southeast Asia, etc.) where Japanese businesses can collaborate and lead manufacturing.

4. The Promotion of Collaborative Education and Research with Leading Overseas Research Institutes and Businesses

We will proactively utilize the integrated global campuses with cooperation between industries, academia, and governments established through the "The Education Program for Innovative Global Engineers" of Top Global University Project, and promote collaborative education and research with leading overseas research institutions and businesses.

5. The Promotion of New International Agreements with Overseas Universities and Research Institutions with Excellent Track Records

We will seek to continuously develop, operate, improve, and expand international exchange agreements and promote new agreements with overseas universities and research institutes that have made excellent achievements.

The Organizational and Administrative Management

The enhancement of organizational and administrative management under the leadership of the President of the university

We will invite individuals with expertise from inside and outside of the university to participate in university management and promote evidence-based university management to enhance our system of governance under the leadership of the President. We will also seek to obtain understanding and support for our management by proactively offering information to the stakeholders and having interactive dialogues. We will also promote the strategic development and sharing of the university assets and enhance our roles to further contribute to local and global communities.

Action Plan 5

1. The Establishment and Use of the Stakeholder Advisory Council/Proactive Promotional Activities to Various Stakeholders

We will newly establish the Stakeholder Advisory Council as a new mechanism and invite a wide variety of people, such as current students, graduates, and local residents, to participate in it to reflect the wishes and expertise of various stakeholders in our university management in order to create a highly transparent system of governance. We will also use diverse public-relations media, such as integrated reports, to spread information on the university activities and management situation in a timely and appropriate manner and promote active collaborations with the KOYUKAI（the association of NUT alumni） and interactive dialogues with the Stakeholder Advisory Council and other associates. In this way, we will gain the recognition and understanding of various stakeholders and earn their support.

> Note: the KOYUKAI（the association of NUT alumni） regards the graduates, current students, and the current and former faculty members of NUT as "alumni" and has been established to promote collaborations between the members, the building and strengthening of their networks, and the revitalization of the education, research, and collaborative social activities conducted by the university.

2. The Formulation and Implementation of a Comprehensive Personnel Policy and a Plan to Develop Human Resources Based on a Long-Term Perspective

We will formulate and implement a new comprehensive personnel policy and a plan to develop human resources based on a long-term perspective to enhance the university's management base for the realization of "Our Future Vision." We will recruit faculty members equipped with the necessary skills to assist the President with management of the university from inside and outside of the university, regardless of their occupations while taking into account the diversity of their gender, nationality, age, etc.

3. The Enhancement of the System that Strategically Promotes the Effective Use of Our Facilities and Equipment and the Promotion of Systematic Renovation of Our Facilities

We will implement the Campus Master Plan and the Equipment Master Plan in an integrated manner and enhance the system that strategically promotes the effective use of our facilities and equipment. At the same time, we will promote systematic renovation of aging facilities with diverse financial resources based on a plan to extend the longevity of our infrastructure and develop sustainable facilities and equipment that can meet future needs, including the needs of local residents and businesses.

■ Social Cooperation
4. The Development of a System of a Virtuous Cycle to Improve the Quality of Our Education and Research and to Increase the Efficiency of Our Administrative Management

We will promote the digitization of our on-campus data, including education and research data and administrative data, build a system of a virtuous cycle to improve the quality of our education and research and to increase the efficiency of our administrative management based on IR (Institutional Research), and promote evidence-based corporate management. (→ The digitalization of our campus5)

Treasury The diversification of financial resources and the establishment of a stable fiscal base

In addition to public funds, we will proactively seek to secure funds through donations and joint/contract research with industries and other institutions. We will also seek to diversify financial resources through the active utilization of our assets and investments for the promotion of the utilization of research results to establish a stable fiscal base.

Action Plan 6

1. The Diversification of Financial Resources and the Securing of Stable Internal Revenue Sources

We will develop a medium-term financial plan to expand the external revenue sources through various systems, such as revenues from our collaborative satellite offices for businesses, our participation in industry-academia collaborative events, including the contribution of technology seeds, and donations secured through the enhancement of collaborations with our graduates in addition to the revenue from our joint research and contract research in Japan and overseas. Based on this plan, we will diversify our financial resources and secure stable and independent revenue sources.

2. The Projects for the Development of Future Financial Resources

We will support entrepreneurial activities started by the university by making our facilities and equipment available and providing investment through participation in the regional systems in collaborations with private businesses, financial institutions, and local governments. We will also proactively promote participation in collaborative systems, such as industry-academia collaborative projects in partnership with the businesses set up in the collaborative satellite offices at the university, regional collaborative projects at the Top Runner Incubation Center for Academia-Industry Fusion, and regional collaboration platforms. We will develop our future financial resources through those activities.

The Campus Digitalization

The utilization of information technologies in education and research and organizational/administrative management

Our faculty and staff will work together to proactively utilize information technologies to advance the quality of our education and research and organizational/administrative management. They will also promote the digitalization of our campus and develop the necessary system for organizational/administrative management that will lead to higher efficiency in our administrative system and better information security.

Action Plan 7

1. (1)　The Promotion of the Diversification of Class Formats in the New Normal and the Strengthening of the Support for Education and Research

We will effectively utilize the online education and research environment established at our campus and overseas partner universities during the coronavirus pandemic and strengthen the support for our students in their education and research through the promotion of the diversification of class formats in the new normal where we offer and expand online on-demand classes. To achieve this objective, we will enhance the network environment on campus and reconstruct the course management system and the remote lecture support system for their integrated operation.

2. The Development of an Environment that Allows Students to Receive On-Campus Lectures Even During Long-Term Off-Campus Internships

We will develop a new environment for on-demand lectures that will allow the students on long-term internships, such as those conducted at external institutions for several months as part of human resource education for the development of practical and creative abilities, to receive on-campus classes on the subjects related to the internships even when they are away on the program.

3. The Establishment of the Office for Digital Campus Promotion and the Development of Human Resource for the Project, and the Digitization of the University Operations

We will establish a new Office for Digital Campus Promotion to promote the introduction of digital technologies into the university operations, ensure information security, and develop human resources to promote digitalization. At the same time, we will introduce an electronic payment system as well as RPA and similar technologies to create a paperless and digital environment to significantly increase the efficiency of the university operations. We will also strengthen the ICT system of our administration office.

4. (4)　The Construction of a System of a Virtuous Circle to Improve the Quality of Our Education and Research and the Efficiency of the University Operations

We will promote the digitization of our on-campus data, including education and research data and administrative data, and develop a system of a virtuous circle based on IR (Institutional Research) to improve the quality of our education and research and increase the efficiency of our administrative management and promote evidence-based corporate management. (→ Organizational/Administrative Management 5)