TAIWAN TECH

2023

Social Responsibility and Sustainability Report

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About the Report

The 2023 National Taiwan University of Science and Technology (NTUST) Social Responsibility Report (hereinafter referred to as the Report) is compiled and edited by the NTUST Sustainability and Research and Development Center. The content fully discloses the university's social responsibility management principles, policy implementation outcomes, encompassing performance related to the United Nations Sustainable Development Goals (SDGs), as well as significant policy advancements by the university, showcasing our self-defined role and positioning.

Reporting Principles

This report primarily utilizes the Sustainability Tracking Assessment & Rating System (STARS) as reporting tool which was developed by the Association for Advancement of Sustainability in Higher Education (AASHE) for sustainable development tracking and assessment in North American higher education institutions. Additionally, it employs the United Nations Sustainable Development Goals as a key disclosure framework.

Reporting Period

This report focuses on the year 2023 (January 1, 2023 to December 31, 2023) and covers the academic year 2022 (August 1, 2022 to July 31, 2023). For completeness, some information may include data from the academic year 2023 (August 1, 2023 to July 31, 2024).

Scope of the Report

The information presented in the report covers the activities of NTUST as its main subject.

Report Writing and Quality Management Process

The first draft of this report was provided by the members of the NTUST Sustainability and Research and Development Center. The information and data were reviewed for correctness and completeness by the heads of each unit, and then reviewed by the Strategy Promotion Committee.

Feedback

Contact: NTUST Sustainability and Research and Development Center
USR site：https://usr.ntust.edu.tw/
Tel：02-2733-3141
Address：106335 No. 43, Section 4, Keelung Road, Da 'an District, Taipei City

Foreword by the President

Since its establishment in 2017, the Ministry of Education's "University Social Responsibility (USR) Practice Plan" has garnered growing interest within the education sector. Both on a national and global scale, the question of how universities should exemplify and enact social responsibility has been tackled with diverse professional capabilities and technical expertise. NTUST, as an institution specializing in technical and vocational education, has shown remarkable achievements in local engagement, industry linkages, and sustainable development in recent years. For four consecutive years, NTUST has held the top position in the Commonwealth Magazine's University Citizenship Survey Rankings (in the category of public technical and vocational university)
 USR is also an integral part of the university's medium to long-term institutional development. In alignment with the university's vision, educational objectives, and medium-to-long-term development plan, a comprehensive multicore development blueprint has been crafted. This encompasses local engagement and community revitalization, talent cultivation and holistic development, environmental resilience and sustainability, and international collaboration and resource sharing. Through the close alignment of USR initiatives with the university's institutional development goals and strategies, and with the dedicated effort and support from the university's faculty, students, alumni, and international partners, the university's core USR values are further enhanced and enriched.

NTUST envisions itself as a globally-oriented applied research university focusing on technological innovation and industrial applications. Taking inspiration from the United Nations' 17 SDGs, NTUST actively embraces social responsibility. We cultivate students' awareness of international issues, strengthen the connection between USR and SDGs, and thereby establish the university's international sustainable impact and competitive advantage.

In 2022, several NTUST teams went abroad, reaching beyond domestic boundaries to Indonesia, Vietnam, Nepal. They engaged in initiatives such as irrigation improvement or post-earthquake housing reconstruction. These efforts demonstrate our commitment to USR while providing participating students with invaluable hands-on experiences.

In the future, NTUST will uphold its time-honored spirit of pragmatism while adapting to industrial changes and sustainable development. It will incorporate five core values: Inter**N**ationality, **T**eaching and Learning, **U**nity in Diversity, **S**ocietal Commitment, and **T**alent Cultivation. Based on these values, we encourage students to boldly transcend boundaries, break free from constraints, and achieve personal growth and transformation. NTUST will nurture well-rounded technical talent, crafting a fresh identity for the university that resonates with its motto "Aspire Higher."

Profile

7 Colleges **26 Departments/Institutes**

To respond to industry shifts and foster essential talents for Taiwan's industry, the government established the National Taiwan Institute of Technology in 1974, initially for undergraduate studies. In 1979 and 1982, master's and doctoral programs were introduced, respectively. In 1997, the institution was upgraded and renamed as National Taiwan University of Science and Technology, also known as "Taiwan Tech." The university aspires to become an internationally oriented applied research institution. Its educational goal is to nurture globally competitive talents in science and management with an innovative practical spirit and a strong sense of social responsibility.

Currently, the university has seven colleges, twenty-six departments/institutes, and ten programs. These seven colleges encompass Engineering, Electrical Engineering and Computer Science, Management, Design, Liberal Arts and Social Sciences, Applied Sciences, and, as the latest addition, the College of Industry-Academia Innovation. NTUST boasts a General Education Center that offers a broad spectrum of courses to all students, and a Teacher Training Center dedicated to nurturing qualified educators for the future. Moreover, we facilitate inter-departmental credit and degree programs, and we established several university-level research centers to synergize research efforts across diverse departments. These initiatives provide students with a variety of courses, fostering interdisciplinary talents.

Members of the University
2023 Academic Year

427 full-time faculty (including teaching assistants) (Science and Engineering 76%; Management/Humanities & Social Sciences/Design 24%), 130 contract faculty, 127 administrative staff, 236 contract administrative staff

11,672 students (1,084 PhD students, 4,995 master students and 5,593 undergraduate students), graduate students and undergraduates account for about 50% respectively

International degree students: 1,366
Graduate level : 889 international students, 40 Overseas Chinese students, 49 Mainland China students.
Undergraduate level: 144 international students, 243 Overseas Chinese students, 1 Mainland China students

Exchange student profile

Academic year/ppl		2019	2020	2021	2022	2023
Incoming	Undergraduate level	91	106	292	86	85
	Graduate level	200	3	1	0	122
Outgoing	Undergraduate level	102	11	36	89	82
	Graduate level	73	10	25	50	94

International exchange overview: Partner universities

Number of universities	2019	2020	2021	2022	2023
Total	355	351	359	404	414
New	24	13	8	9	9

Year
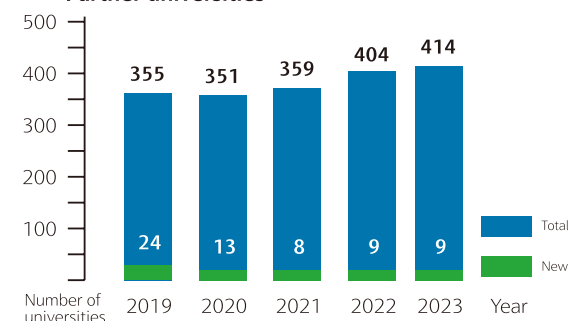
The Campus

The NTUST campus includes the Taipei Main Campus, the new campus of Gong Guan, the Tucheng Campus, the Keelung Slope Engineering Research and Test Station, the Hsinchu Campus, and the Hwa Hsia Campus. At present, these campuses cover an area of 20.48 hectares.

國立臺灣科技大學校園 N
平面配置圖 | Layout of Taiwan Tech

The new campus of Gong Guan
1.9 hectare

The Taipei Main Campus
9.7 hectare

The Hsinchu Campus
7 hectare

The Tucheng Campus
1.88 hectare

The Hwa Hsia Campus
the 5th and 6th floor of
Heng-Yi Building
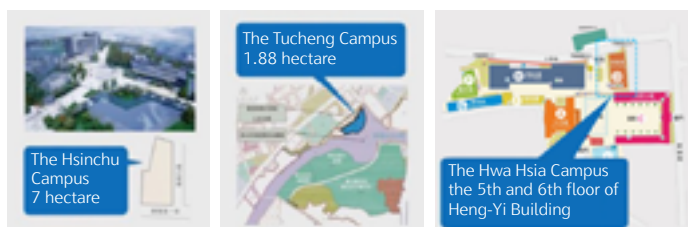
College of Engineering

Graduate Institute of Automation and Control
Department of Mechanical Engineering
Department of Materials Science and Engineering
Department of Civil and Construction Engineering
Department of Chemical Engineering
Executive Master of Research and Development Program (EMRD)
Semiconductor Executive Master of Research and Development Program(SEMI-EMRD)
International Advanced Technology Program (IATP)
Global Development Engineering Program (GDEP)
CE Undergraduate Honors Program

College of Electrical Engineering and Computer Science

Graduate Institute of Electro-Optical Engineering
Department of Electronic and Computer Engineering
Department of Electrical Engineering
Department of Computer Science and Information Engineering
ECE Undergraduate Honors Program

School of Management

MBA Program
Department of Industrial Management
Department of Business Administration
Department of Information Management
Graduate Institute of Finance
Graduate Institute of Technology Management
Graduate Institute of Management
Management Undergraduate Program

College of Design

Department of Design
Department of Architecture

College of Liberal Arts and Social Sciences

Graduate Institute of Digital Learning and Education
Department of Applied Languages
Department of Humanities and Social Sciences
Teacher Education Center

College of Applied Sciences

Graduate Institute of Applied Science and Technology
Graduate Institute of Biomedical Engineering
Graduate Institute of Color and Illumination Technology
Graduate Institute of Patent
Bachelor Degree Program of Applied Science and Technology
Inter-Disciplinary Bachelor's Program

College of Industry-Academia Innovation

Graduate Institute of Intelligent Manufacturing Technology
Graduate Institute of A.I. Cross-disciplinary Technology
Graduate Institute of Energy and Sustainability Technology

About NTUST

Sustainable Development Plan

Cultivating innovative and internationally mobile talents for industries has become crucial to respond to industry changes and global trends. Since taking office in 2021, President Jia-Yush Yen has outlined the "Taiwan Tech 2030" vision, aiming to transform the university into a globally-oriented applied research institution focusing on technological innovation and industrial applications. NTUST advocates for "π-shaped talent cultivation," aiming to develop technically skilled individuals (the left leg of "π"), nurture liberal arts (the right leg of "π"), and enhance transnational communication skills (the horizontal bar of "π"). NTUST graduates will be internationally competitive, tech-savvy professionals with innovative prowess and societal commitment.

Vision and Goals

NTUST Vision Statement

To develop an internationally renowned applied research university with a focus on technological innovation and industrial applications.

N	T	U	S	T
interNational	Teaching and Learning	Unity in diversity	Society	Talent

Educational Objectives

Cultivating globally competitive technology and management professionals through innovative practices and a strong commitment to societal welfare

Developing Transnational Communication Skills
Enhancing International Mobility and Collaboration Skills

Professional and Practical skills
Enhancing Professional and Practical Skills

Liberal Arts Competency
Linking Social Responsibility and Practice

Midterm Goals

1 Deepen teaching innovation, promote self-learning

2 Strengthening social responsibility and emphasizing whole-person education

3 Deepen international integration, expand students' horizons

4 Focusing on areas of strength, unleashing R&D energy

5 Retaining, attracting, and cultivating talent, putting equal emphasis on teaching and research

6 Optimizing the institutional environment, building a sustainable campus

7 Cultivating high-quality talents implementing industrial development

Accomplishments

NTUST has achieved remarkable milestones during the years 2005-2010 and 2011-2016 under the Ministry of Education's First and Second Phase of the Initiative for Top University Project, respectively. Furthermore, we were selected for the Exemplary Technological University Project during 2013-2016 and awarded the Five-Year Higher Education Sprout Project in 2018. In global university rankings, as of 2024, we stand at 387th place in the QS World University Rankings (5th in Taiwan) and 401-500 in the TIMES World University Rankings. In the QS Asia University Rankings 2024, we are placed 74th, while in the TIMES Asia University Rankings 2023, we hold the 137th position. For the TIMES Young University Rankings 2023, we achieved the 151-200 rank. Regarding specific academic fields, in the 2024 TIMES World University Subject Rankings, we are positioned 43th in Education (2nd in Taiwan), 301-400 in Computer Science, and 301-400 in Business and Management. In the 2023 QS World University Subject Rankings, we secured a position within the top 150 for Education (3rd in Taiwan) and within the top 200 for Civil and Structural (3rd in Taiwan)

QS WORLD UNIVERSITY RANKINGS * Figures in brackets show Taiwan's ranking

- ★ **2024** QS **World** Rankings **No.387 (No.5)**
- ★ **2024** QS **Asia** Rankings **No.74 (No.5)**
- ★ **2023** QS **Subject** Rankings
  - Eng. & Tech. **No.247 (No.6)**
  - CS and IS **No.201-250 (No.4)**
  - Eng.(Civil & Structural) **No.151-200 (No.3)**
  - Education **No.101-150 (No.2)**
  - Art & Design **No.151-200 (No.3)**

THE WORLD UNIVERSITY RANKINGS

- ★ **2024** THE **World** Rankings **No.401-500 (No.3)**
- ★ **2023** THE **Young** University Rankings **No.151-200 (No.3)**
- ★ **2023** THE **Asia** Rankings **No.137 (No.8)**
- ★ **2024** THE **Subject** Rankings
  - Education **No.43 (No.2)**
  - Bus. & Econ. **No.301-400 (No.3)**
  - Computer Sci. **No.301-400 (No.6)**
  - Engineering **No.301-400 (No.5)**

Surveys "Taiwan Corporate Favorite College Graduates", conducted by "Global Views Monthly" and "Cheers" magazines

Employability No.1

Ranking of science and technology universities

The magazines "Global Views Monthly" and "Cheers" conducted surveys on Taiwan's publicly listed companies to determine their preferred university graduates. NTUST ranked first among technical and vocational universities in both surveys.

The magazines "Foresight" and "Cheers" have conducted surveys of companies in Taiwan on the topic of "Corporate favorite university students"

"Global Views Monthly" magazine "2023 Taiwan Corporate Favorite College Graduates" survey

University/Ranking		IT industry /Ranking		Financial services industry/Rankings	
NCKU	1	NCKU	1	NCCU	1
NTUST	2	NTUST	2	NCKU	2
NTUT	3	NTUT	3	NTUST	3
NTU	4	NYCU	4	TKU	4
NYCU	5	NTU	5	FJCU	5

"Cheers" magazine "2023 Taiwan Corporate Favorite College Graduates" survey (Technological & Vocational Universities Category TOP10)

University/Ranking	
NTUST	1
NTUT	2
NKUST	3

Rating source	2017	2018	2019	2020	2021	2022	2023
QS Graduate Employability Rankings [Taiwan]	–	171-180 [4]	201-250 [4]	191-200 [4]	201-250 [4]	201-250 [4]	–
THE Global University Employability Ranking [Taiwan]	65 [1]	124 [2]	98 [2]	82 [1]	83 [1]	86[2]	86[2]
"Global Views Monthly" Taiwan Corporate Favorite College Graduates (Technological & Vocational Universities Category)	9 [1]	3 [1]	4 [2]	3 [1]	3[1]	2 [1]	2[1]
"Cheers" Taiwan Corporate Favorite College Graduates (Technological & Vocational Universities Category)	5 [1]	5 [1]	6[2]	5 [1]	7 [2]	9[2]	8[1]

About NTUST

Accomplishments

Top in the Field of USR for Five Consecutive Years

The "CommonWealth Magazine University Social Responsibility" survey draws inspiration from corporate ESG (Environmental, Social, and Governance) principles. It comprehensively assesses universities based on four dimensions: university governance, social engagement, environmental sustainability, and educational commitments to faculty, staff, and students—the most vital stakeholders. This holistic approach ensures a balanced evaluation of a university's social responsibility and sustainable development. In the 2023 CommonWealth Magazine USR survey, NTUST ranked first among technical universities.

2023 University Social Responsibility Award
Public Science & Technology Universities

Ranking	Name of the universit	Average total score	Governance	Social reference	Teaching commitment	Environment sustainability
★ 1	NTUST	3.56	4.56	3.70	3.30	2.70
2	NTUT	3.53	4.22	2.90	3.60	3.40
3	NYUST	3.34	3.78	2.80	3.40	3.40
4	NPUST	3.04	3.67	2.90	2.90	2.70
5	NKUST	2.73	3.00	3.30	2.30	2.30

In September 2023, NTUST ranked 1st in the "University Social Responsibility Survey" conducted by CommonWealth Magazine (technical university category) (In November 2022, NTUST received the Taiwan Corporate Sustainability Award - Bronze Level for sustainability reporting NTUST Alumni donated to the restoration of the Leshan Sanatorium 15 buildings were successfully restored through this initiative which revitalized and repurposed historical architecture.

Academic and Industry-Academia Excellence

• 2022 Taiwan Innovation Technology Expo: The NTUST team received the Platinum Award for Asian Innovation and Invention
• 1 participant won the 14th National Award of Outstanding Caring Medal
• Won the outstanding unit award of industry-academy cooperation of the Chinese Institute of Engineers in 2022
• 2022 "World's Top 2% Scientists List": 55 professors listed in the "Lifetime Scientific Impact Rankings (1960-2022)" and 45 professors listed in the "2022 Annual Scientific Impact Rankings "

2022 World's Top 2% Scientists by Stanford University, includes 70 NTUST faculty

• Red Dot Design Award 2023 : Ranked 1st in Asia Pacific region in the
• The logo of the Department of Design was selected into the permanent collection of the Museum of Avant-garde in Switzerland and shortlisted for the annual Graphic Design Award of the 2022 Henry Steiner MA-g Awards.

The logo design takes fundamental elements of design – points, lines, and shapes – as its starting point, connecting them to create a three-dimensional representation from a two-dimensional plane. Giving the Department of the Design a new face, all faculty members are portrayed with their faces, symbolizing their individual identities

Student Awards

• 2023 Red Dot Design Award (Germany): three winner awards
• 2022 iF Design Talent Award (Germany): nine awards
• 2022 Young Ones design competition: Young Ones Portfolio Award (first in Taiwan and East Asia)
• 2022 46th World Skills Competition: two gold, six silver, two bronze medals and eight prizes
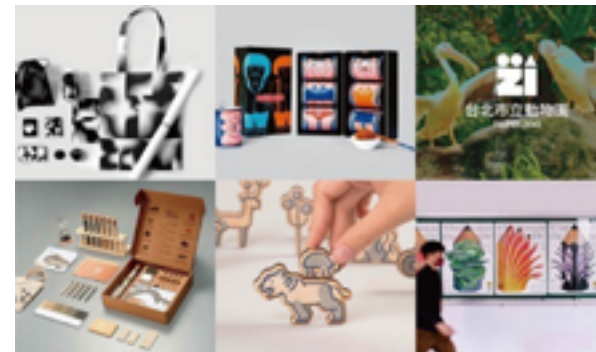
Young Ones Portfolio Award - 6 works

The "Detachable table", "RTV-Rapid Treatment Vehicle", and "Unitstick" won the 2023 Red Dot Design winner awards

Performance

SDGs in Education and Research

NTUST actively promotes campus sustainability, integrating internal resources and fostering collaboration among faculties, departments, and the General Education Center. We develop courses and research aligned with the 17 SDGs to cultivate students' awareness of sustainable issues. In our research, we contribute to sustainable problem-solving, thereby establishing the university's lasting impact. At this stage, we are consolidating statistical data on academic publications, course offerings, and the number of student social engagement projects to quantify our efforts in promoting sustainability.

SDG-related academic publications

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2020	2	2	66	47	0	46	187	10	76	5	49	26	25	5	1	1
2021	3	3	103	42	2	37	236	33	90	6	52	39	41	10	6	6
2022	2	10	117	77	1	46	235	22	114	4	52	37	43	5	16	6
2023	1	6	121	81	4	58	211	26	123	6	38	36	52	4	7	4
Total	8	21	407	247	7	187	869	91	403	21	191	138	161	24	30	17

Number of SDGs related courses and students' practical projects

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Course	8	3	26	38	24	11	37	23	20	17	13	41	1	3	3	39	39
Practical project	2509	1098	1202	836	627	523	784	418	418	366	261	209	261	261	52	157	209

Employment Perspectives of NTUST Graduates

We conduct annual surveys 1-year, 3-years, and 5-years after graduation to track the career paths of our graduates. The results of these surveys are submitted to the Ministry of Education's tracking platform, and subjected to comprehensive statistical analysis. This information serves as valuable feedback for our departments, aiding them in improving their teaching approaches.

Graduate Employment rate 2015-2021 (%)
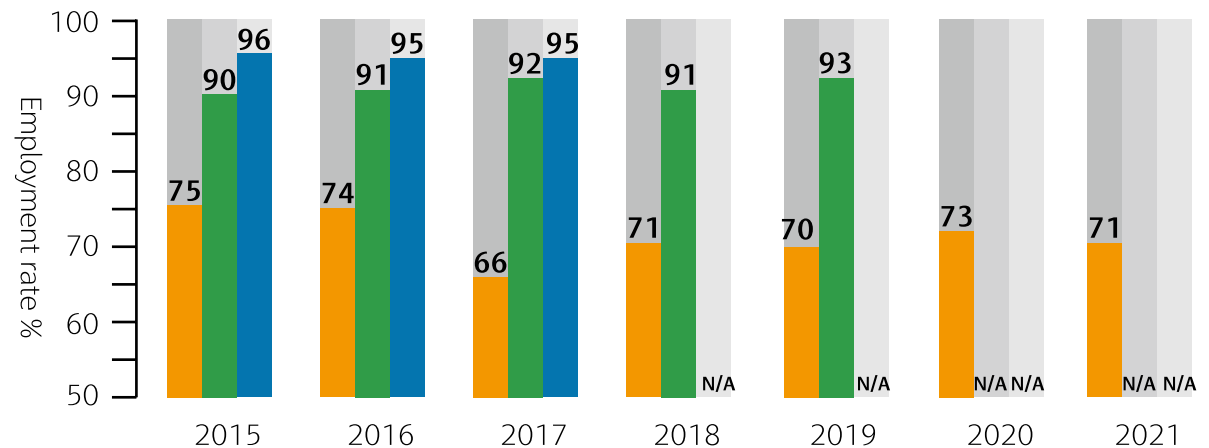
The average job satisfaction rate among 2023 NTUST graduates is 4.8

Employment rate %

Graduation year	2015	2016	2017	2018	2019	2020	2021
1 year after graduation	75	74	66	71	70	73	71
3 year after graduation	90	91	92	91	93	N/A	N/A
5 year after graduation	96	95	95	N/A	N/A	N/A	N/A

Graduation year ■ 1 year after graduation ■ 3 year after graduation ■ 5 year after graduation

Data source: Ministry of Education Tracking Platform for Graduates of Tertiary Institutions Note: Recent statistics for the past 3 years indicate that, one year after graduation, the bachelor's employment rate is 36-38%, with 89-92% of the unemployed pursuing further education; the master's employment rate is 93-94%, and the doctoral employment rate stands at 87-96%.

Sustainable Management

Organizational Structure

Following the organizational regulations for universities outlied by the MoE, administrative units and committees are established, involving both faculty and students These committees offer suggestions for the development and operation of the university

Task Force: Audit Office

President

Vice President

University Affairs Meeting
Administrative Meeting
Academic Affairs Meeting
Student Affairs Meeting
General Affairs Meeting

Faculty Evaluation Committee
Industrial-Academic Cooperation Committee
Staff Selection and Appraisal Committee
Craftsmen/Workers Screening Committee
Faculty Grievance Review Committee
Staff Grievance Review Committee
Craftsmen/Workers Grievance Review Committee
Student Grievance Review Committee
Commission for General Education
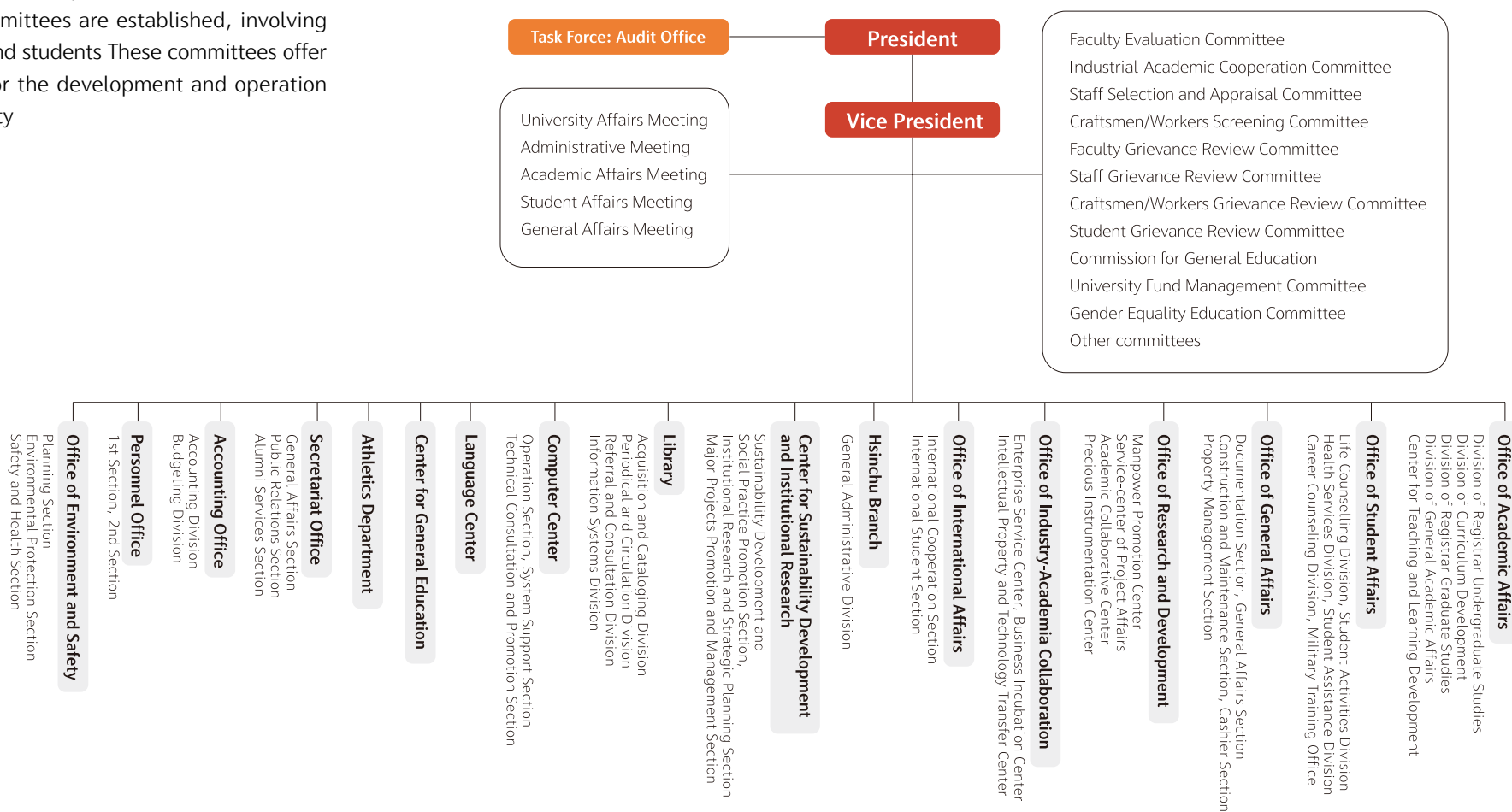University Fund Management Committee
Gender Equality Education Committee
Other committees

Office of Environment and Safety
Planning Section
Environmental Protection Section
Safety and Health Section

Personnel Office
1st Section, 2nd Section

Accounting Office
Accounting Division
Budgeting Division

Secretariat Office
General Affairs Section
Public Relations Section
Alumni Services Section

Athletics Department

Center for General Education

Language Center

Computer Center
Operation Section, System Support Section
Technical Consultation and Promotion Section

Library
Acquisition and Cataloging Division
Periodical and Circulation Division
Referral and Consultation Division
Information Systems Division

Center for Sustainability Development and Institutional Research
Sustainability Development and
Social Practice Promotion Section,
Institutional Research and Strategic Planning Section
Major Projects Promotion and Management Section

Hsinchu Branch
General Administrative Division

Office of International Affairs
International Cooperation Section
International Student Section

Office of Industry-Academia Collaboration
Enterprise Service Center, Business Incubation Center
Intellectual Property and Technology Transfer Center

Office of Research and Development
Manpower Promotion Center
Service-center of Project Affairs
Academic Collaborative Center
Precious Instrumentation Center

Office of General Affairs
Documentation Section, General Affairs Section
Construction and Maintenance Section, Cashier Section
Property Management Section

Office of Student Affairs
Life Counselling Division, Student Activities Division
Health Services Division, Student Assistance Division
Career Counseling Division, Military Training Office

Office of Academic Affairs
Division of Registrar Undergraduate Studies
Division of Curriculum Development
Division of Registrar Graduate Studies
Division of General Academic Affairs
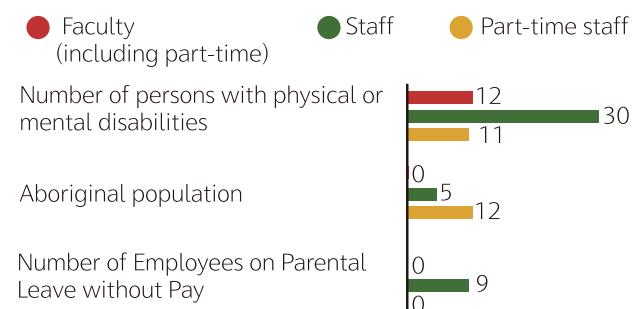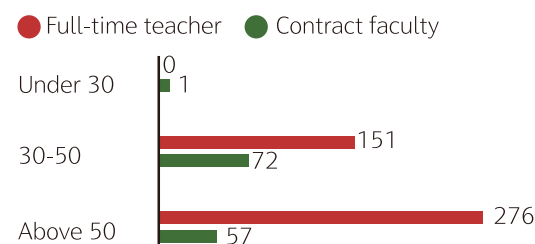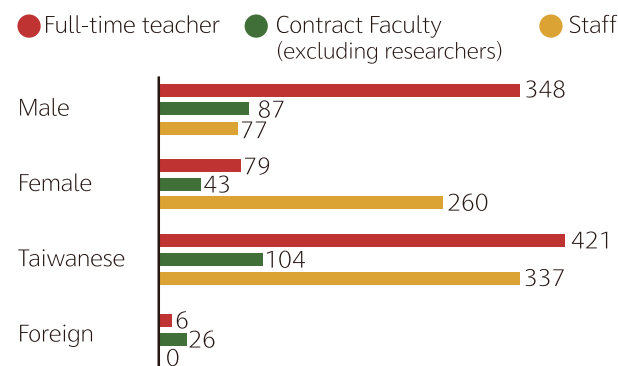Center for Teaching and Learning Development

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Harmonious Workplace

- Contract faculty: About 23% of NTUST faculty are contract-based, effectively improving the student-teacher ratio
- Contract employee: 70% of the administrative staff are contract-based, enhancing the administrative manpower
- Employees with disabilities: 15.72% of total staff count
- Establishment of Comprehensive Personnel Management System: Striving to ensure consistency in rights and responsibilities between internal and external staff members, thereby strengthening the administrative workforce mechanism

Encouraging the Appointment of External Personnel

- Promotion of Outstanding Project Faculty to Leadership Roles: 2023, nine contract faculty were appointed to leadership positions
- Re-hiring of retired workforce: 2023 ten individuals were re-employed on contractual terms 2023 academic year

Internationalization of Faculty, Bilingual HR Services

- Promotion of recruitment of international faculty; the PR office launched an international recruitment section on its website. 2023, NTUST had 32 international faculty members and 18 visiting scholars.
- English workshops for administrative staff are held to improve language; English proficiency test fees and awarding English proficiency advancements are subsidized
- Staff English Proficiency Certificates:
- Regular Staff (3 Advanced, 10 High-Intermediate, 21 Intermediate, 19 Elementary)
- Contract staff (1 Superior, 4 Advanced, 23 High-Intermediate, 29 Intermediate, 13 Elementary)

Chart 1 — Legend: Full-time teacher / Contract Faculty (excluding researchers) / Staff

Category	Full-time teacher	Contract Faculty	Staff
Male	348	87	77
Female	79	43	260
Taiwanese	421	104	337
Foreign	6	26	0

Chart 2 — Legend: Full-time teacher / Contract faculty

Category	Full-time teacher	Contract faculty
Under 30	0	1
30-50	151	72
Above 50	276	57

Chart 3 — Legend: Faculty (including part-time) / Staff / Part-time staff

Category	Faculty (including part-time)	Staff	Part-time staff
Number of persons with physical or mental disabilities	12	30	11
Aboriginal population	0	5	12
Number of Employees on Parental Leave without Pay	0	9	0

Sustainable Management

Internal Control Mechanism

The internal control team consists of 11 to 15 members, with one Vice President designated by the President as the convener. Other members are invited by the President or the convener and may include relevant department heads or scholars/experts from both inside and outside the university. Committee members serve for one academic year and can be reappointed consecutively. Administrative tasks are managed by the Secretary's Office.

Duties

1. Conduct internal control and audit education and training.
2. Review and strengthen existing internal control procedures.
3. Integrate and review internal control operations or specific operational areas.
4. Incorporate common operating standards for the internal control systems established by various authorities and assess the significance and risks of individual areas. Develop appropriate internal control and internal audit operation regulations for the university.
5. Plan and implement annual audit plans, conduct special audits when necessary, and produce audit reports.
6. Report internal audit findings and improvement suggestions to the President for approval in a timely manner, and track their implementation progress.
7. Handle tasks assigned by the President or other matters resolved during committee meetings.

Audit Project and Results for the Academic Year 2019-2022

Academic year	Number of audits performed	Closed cases	Outstanding cases
2019	41	41	0
2020	40	40	0
2021	39	39	0
2022	43	43	0

Financial Planning and Management Mechanism

Fund Management Mechanism

To ensure the achievement of both the overall goals and the phased performance indicators of institutional development, the university has established mechanisms including the Strategy Promotion Committee, the Fund Management Committee, the Internal Control Promotion Committee and other committees. Additionally, an audit office has been set up to ensure the efficient utilization of funds and to guarantee the comprehensive financial development of the university's finances.

Sustainable Investment

In 2023, the university's investment income primarily consisted of interest income totaling NTD 35,707,491 and cash dividend income of NTD 1,579,832.

Statement of Investment Income and Loss of the University Endowment Fund for the Year 2023

Item	Amount (NT$)
1. Interest income	35,707,491
2. Cash dividend income	1,579,832
Chunghwa Telecom Co. LTD	687,432
MPI CORPORATION	700,000
FENG SANG ENTERPRISE CO., LTD.	13,500
Yuanta Financial Holding Co., Ltd.	8,000
Mega Financial Holding Company Ltd.	12,400
CTBC Financial Holding Co., Ltd.	10,000
Taiwan Mobile Co., Ltd.	43,000
Far EasTone Telecommunications Co., Ltd.	32,500
Yuanta Taiwan High Dividend Low Volatility ETF	73,000
3. Investment surplus	627,503
Total investment profits and losses	**37,914,826**

Detailed Account of the Changes in the University's Available Funds in 2023

Unit: thousand NT$

Item	Estimated amount	Actual amount
Cash and time deposits of the last term (A)	2,966,335	3,233,752
Add: Current Regular Cash Income (B)	3,527,754	3,467,715
Subtract: Current Regular Cash Expenditure (C)	3,160,663	3,569,545
Add: Current Cash Income from movable, immovable and other assets (D)	313,688	179,871
Subtract: Current Cash expenditures for movable, immovable and other assets (E)	449,449	342,352
Add: Current financial assets net (increase) or decrease (F)	-	-
Add: Investment net (increase) or decrease of this term (G)	-	2
Plus: Long-term debt borrowings in the current period (H)	-	-
Minus: Long-term debt repayments in the current period (I)	23,896	20,367
Add: Other Effects on Current Cash Adjustment, Increase /Decrease Amount (J)	-	48,752
Cash and deposits at the end of the period （K=A+B-C+D-E+F+G+H-I+J）	3,173,769	2,997,809
Add: End-of-Period Short-Term Current Assets (L)	83,099	680,118
Subtract: End-of-Period Short-Term Liabilities to Be Repaid (M)	1,358,158	1,360,324
Subtract: Number of capital grants not yet implemented (N)	-	-
Forecast of funds available of this term （O=K+L-M-N）	1,898,710	2,317,603
Other important financial information		
End-of-Period Approved but Unallocated Budget for Construction Projects and Reserved Budget for Fixed Assets	180,929	220,837
Government subsidy	-	-
Funded by Reserves Allocated by the School	-	-
Funded by available university funds	180,929	220,837
Borrowed funds	-	-

Long-term debt	Borrowing year	Repayment term	Projected self-compensation rate	Borrowing rate	Total debt	Projected amount for 2023	Actual amount in 2023
Debt item	2017-2020	2021-2046	102%	About 1.535%	679,330	628,714	647,851

Sustainable Management

Negotiating with Stakeholders

A stakeholder is defined as an individual or organization that has a direct or indirect impact on, or is affected by the university. The stakeholders of NTUST include students, parents, faculty and /staff, the board of directors, business owners, government entities, community members / NGOs), alumni. We attach great importance to the communication between stakeholders and the university. In addition to university-related meetings, we also use our website, newsletters, social media or software communication channels to announce the latest information and collect the opinions of stakeholders.

Communication mechanism between administrative departments and the faculty / students

- Administrative meetings are held regularly every month, at all levels in accordance with the university's organizational procedures   to provide a mechanism for communication

- Two student forums are held each semester, chaired by the president to directly listen to students' opinions; improvements are promptly implemented and monitored

- Various channels for feedback were established, such as the president's email address and Facebook; suggestions are forwarded to relevant departments for processing and response

- Birthday parties regularly and other social activities are regularly organized; occasionally "Administrative Workshops for New Staff" are held.

- Establishment of a electronic bulletin board for the publication and circulation of official documents

- Simplification and standardization of workflows in all departments; Establishment of real-time information transmission system to improve administrative efficiency

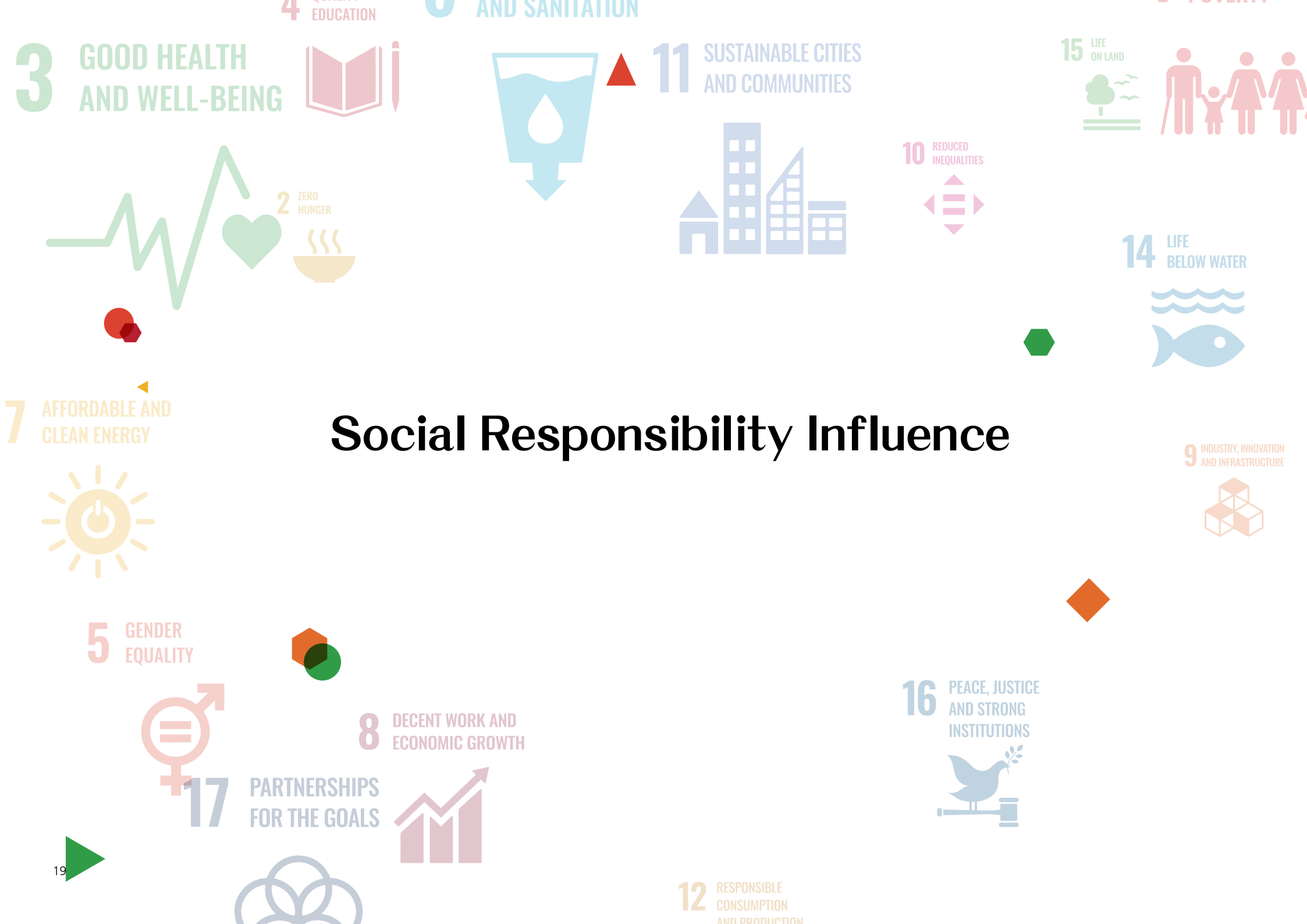| with Student	with Alumni	with Staff
- Student Affairs Committee - Student Dormitory Management Committee - Meeting of Student Club Leaders - Student Grievance Committee - External Internship Committee - Special Education Implementation Committee - University Health Committee - Demolition and redevelopment of student dormitories	- Domestic and International Alumni Associations - Distinguished Alumni Selection and Recognition - Graduate Tracking Survey - Alumni-owned enterprises set-up R&D center - Alumni industry forum and practical teaching - Alumni CSR collaboration	- Faculty evaluation committee - Staff appraisal committee - Faculty grievance review committee - Labor-management meeting - Contract staff screening and evaluation committee

Communication with stakeholders in 2023

	Number of meetings	Participants or proposers	Number of suggested items	Number of cases closed	Number of outstanding cases
Student forums	4	397	31	31	0
NTUST Suggestion platform	-	747	25	24	1
Labor-management meetings	4	40	3	2	1
Faculty grievance	1	1	0	1	0

Social Responsibility Influence

No Poverty

"Build a Dream" Student Grant Dream Accelerator

To enhance the public role of higher education and achieve the goal of "Empowering disadvantaged students for societal mobility," NTUST has launched "Build a Dream " scholarship program. This program offers academic support and counseling to economically challenged students, fostering upward mobility.

The "Build a Dream " scholarship aims to replace part-time work during the semester. Each year, eligible students receive NTD 60,000 to NTD 80,000, enabling them to focus on their studies. The program also offers resources for autonomous learning, foreign language study, psychology, and career guidance. The program sustains through alumni engagement, providing not only financial assistance, but also life coaching and job prospects.

In 2023, the "Build a Dream" scholarship aided 1,894 students, granting a total of NTD 9,964,714, including NTD 4 million from alumni and corporate contributions.

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1.Foreign instructors provide english counseling
2.Learning together, helping each other
3.Self-study club

"Build a Dream" Grant: Overview		2019	2020	2021	2022	2023
Learning Progress Grant	Number of Beneficiaries	524	528	410	192	559
	Total grant amount	NT$2,607,000	NT$3,286,000	NT$2,860,000	NT$1,047,000	NT$2,785,000
License Certification Reward	Number of Beneficiaries	423	170	69	99	155
	Total grant amount	NT$2,906,250	NT$1,310,521	NT$562,708	NT$848,104	NT$1,058,870
Extra-curricular Development Grant	Number of Beneficiaries	528	730	1,395	929	929
	Total grant amount	NT$2,636,000	NT$4,484,685	NT$7,075,074	NT$4,912,000	NT$4,865,844
Career Planning Grant	Number of Beneficiaries	64	133	101	240	251
	Total grant amount	NT$320,000	NT$665,000	NT$505,000	NT$1,195,435	NT$1,255,000
Interview Transportation Allowance	Number of Beneficiaries	52	20	6	--	--
	Total grant amount	NT$40,036	NT$9,879	NT$3,812	--	--
Total	Number of Beneficiaries	1,591	1,581	1,981	1,460	1,894
	Total grant amount	NT$8,509,286	NT$9,756,085	NT$11,006,594	NT$8,002,539	NT$9,964,714

Total grant amount

Number of Beneficiaries
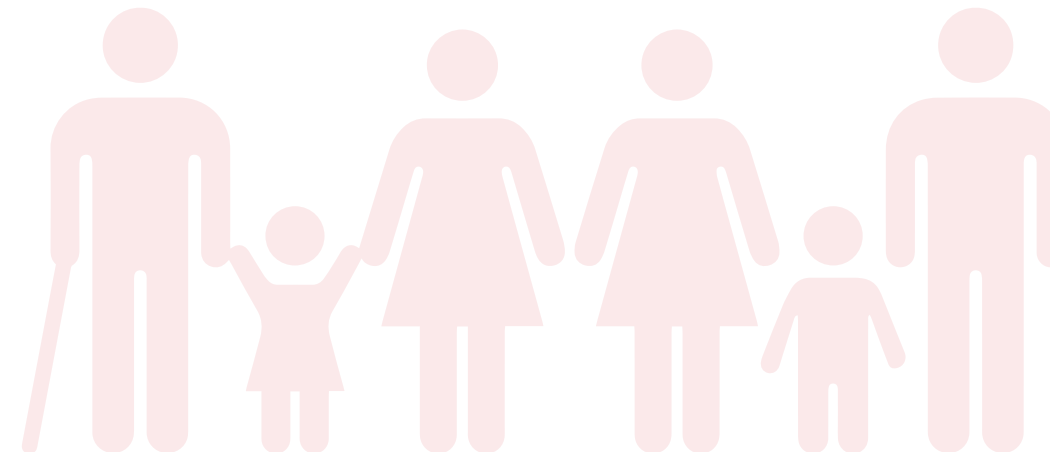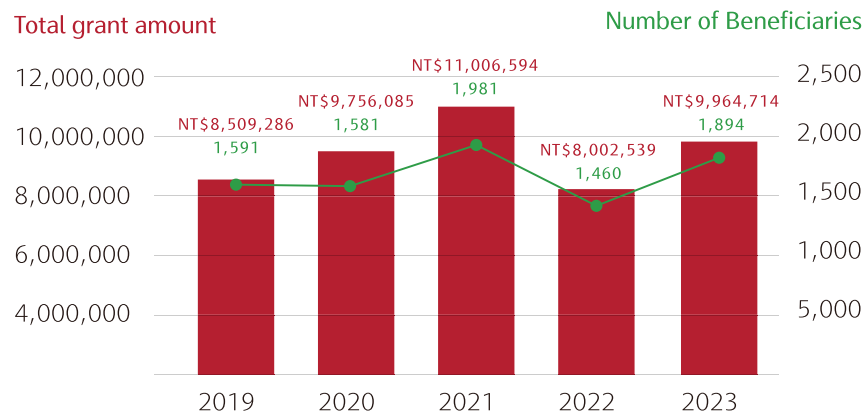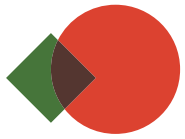
Support for Disadvantaged Students

Meal allowance for disadvantaged students

To assist disadvantaged junior students at NTUST, the alumni of the 2012 MBA program launched the "101 Acts of Kindness" fundraising campaign Through this campaign, they aimed to not only provide meals but also spread goodwill.

As the initiator of this initiative, Chu Tien-lai explains "Once I witnessed that some younger students were only ordering plain rice at the university cafeteria. This deeply touched my heart, and I got the idea of helping them. With the enthusiastic support of my classmates, we launched a fud-raising campaign which aimed to raise NTD 300,000 which would be disbursed as a monthly subsidy of NTD 3,000 per financially disadvantaged student for 9 months in the first year (excluding the summer and winter vacations, when students can support themselves through part-time work) In the second year, we would conduct the fundraising according to the actual expenditure. With the help of the whole class, we achieved the initial goal of NTD 300,000 in less than 24 hours!

All donations of this project were directly transferred to the "101 Acts of Kindness Fund " of Taiwan Tech, and the follow-up donations will be handled by the Office of Academic Affairs. We hope that students in need can get timely assistance, allowing them to pursue their studies at ease the love of NTUST senior students!

Emergency relief grant (Case study)

Student Li became a single parent child in primary school when his parents divorced due to his father's domestic violence. His mother took with Student Li and his younger brother to live in a rented place. Student Li has been working part-time since high school, and he has also been paying for his own living expenses in college, His father, who is suffering from diabetes often, came back to ask for money, further exacerbating the family's financial difficulties. Upon learning about Student Li's family situation, the faculty at his department applied for the Emergency Assistance Fund and the "101 Acts of Kindness" meal subsidy on his behalf to ease his financial burden.
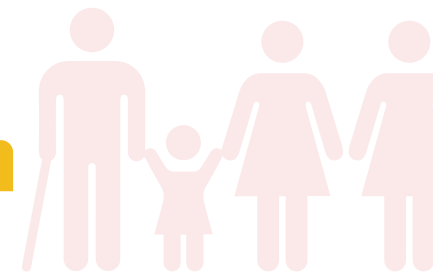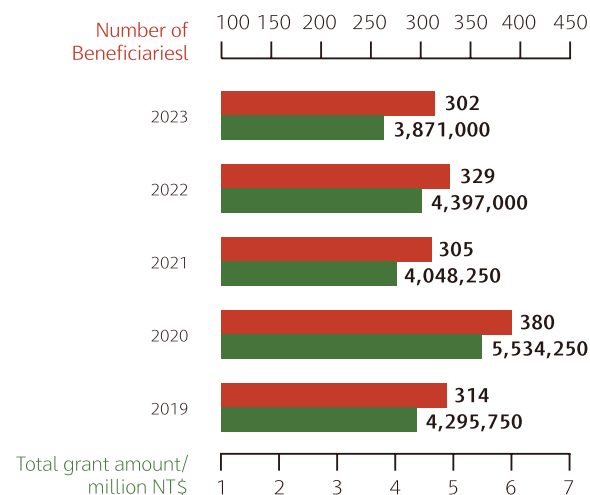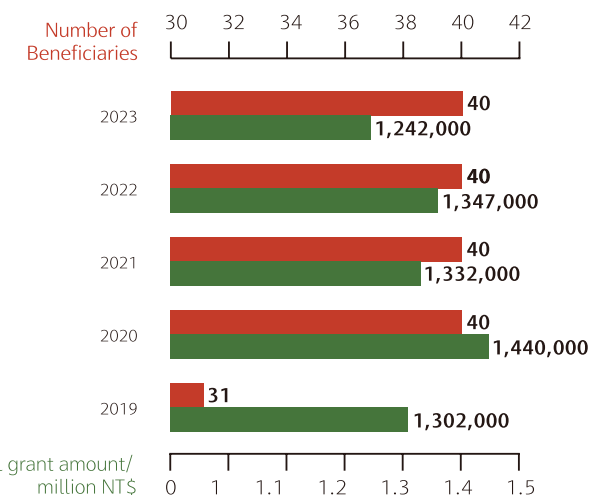
"No Poverty" Grant program: Overview		2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year
University-Industry Emergency Relief Fund	Number of Beneficiaries	4	6	9	6
	Total grant amount	NT$80,000	NT$100,000	NT$180,000	NT$110,000
Off-campus rent subsidy for disadvantaged students	Number of Beneficiaries	58	37	50	36
	Total grant amount	NT$502,400	NT$344,800	NT$479,600	NT$602,640
Free accommodation for students from low-income families	Number of Beneficiaries	14	25	16	33
Grant for disadvantaged overseas Chinese students	Number of Beneficiaries	67	67	56	47
	Total grant amount	NT$2,346,000	NT$2,310,000	NT$1,950,000	NT$1,602,000

"No Poverty" Grants 2019 -2023

Number of Beneficiariesl

Disadvantaged student grant

Year	Number of Beneficiaries	Total grant amount/million NT$
2023	302	3,871,000
2022	329	4,397,000
2021	305	4,048,250
2020	380	5,534,250
2019	314	4,295,750

Living allowance

Year	Number of Beneficiaries	Total grant amount/million NT$
2023	40	1,242,000
2022	40	1,347,000
2021	40	1,332,000
2020	40	1,440,000
2019	31	1,302,000

Improve Local Sales of Roselle Products

Our USR Engineers in Action team participated in the CED-WMCUS program in Indonesia which aims to solve livelihood and environmental problems in Indonesia. Our students worked with local students and residents, and with students from other Southeast Asian countries (Vietnam, Malaysia, Thailand and the Philippines). This collaboration aims to cultivate students' problem-solving abilities, cross-cultural communication skills, and a spirit of teamwork, enabling them to apply their knowledge to solve practical engineering problems.

The project took place in Puhsarang village in East Java, Indonesia, where the local residents have a certain level of education and health awareness. The area is rich in roselle flowers, and most residents rely on tourism as a source of income. With environmental awareness on the rise, the future of Puhsarang is also closely related to how residents adopt a sustainable lifestyle.

Students work together in teams to:

1. Developing branding strategy for roselle farmers in the community, design promotional posters, product packaging and marketing brochures.
2. Educating hibiscus farmers and vendors about the health benefits of hibiscus and conveying this information to customers to increase sales opportunities.
3. Introducing well-known Indonesian online sales platforms to provide vendors with wider market access.
4. Repricing of dried roselle and other products, offering better pricing recommendations to hibiscus farmers to address low profitability issues.
5. Addressing the issue of low product value, the team conducted three workshops for local hibiscus cultivators and vendors where product marketing skills and multiple applications for hibiscus products, were taught.

1. The village of Puhsarang, East Java, Indonesia, which is rich in roselle flowers

2. Design posters, product packaging and marketing brochures for roselle farmers

3. Roselle production workshop was held in Puhsarang village and promoted in local primary schools

Zero Hunger

ZERO HUNGER Makerthon :
Technical-Vocational Cup Competition

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1. Group photo of all participants
2. Practice and discussion during the competition

In April 2021, NTUST hosted the 4th National Ministry of Education Vocational Skills Cup Hackathon North Region Competition in 2021, named "ZERO HUNGER Hackathon: Vocational Skills Cup Grand Competition." This event's theme is based on the 2nd SDG, focusing on Zero Hunger, Achieving Food Security, Improving Nutrition, and Promoting Sustainable Agriculture. The competition guides students to creatively brainstorm, socially design, and prototype solutions related to ending hunger, ensuring food security, and promoting sustainable agriculture, aligned with other tracked indicators.

In this competition, a total of 66 teams with 192 participants took part. On the day of the competition, the question was: "In areas of extreme drought in Africa, where natural resources are unevenly distributed, what kind of device can be used for small-scale farming?" Within the limited time, participating students swiftly demonstrated their organizational, communicative, and practical skills. They addressed the issue of hunger by improving agricultural technology and presented their prototypes to judges and fellow participants on the following day.

Through this event, students are guided think about their personal roles and responsibilities in the world, becoming responsible global citizens. The competition connects students from vocational and technical colleges nationwide with international societal issues, aiming to achieve three educational objectives during the problem-solving process:

1. Encouraging students to apply their knowledge and unleash their problem-solving abilities.
2. Guiding students to collaborate across disciplines through the competition, sparking innovative ideas and implementing creativity.
3. Integrating environmental sustainability concerns and taking on the global challenge of hunger, using "ZERO HUNGER" as the competition's inspiration to solve real-life problems and fulfill the duty of global citizens.

The competition ignites students' motivation to work towards ending hunger, continuously refining their conceptual themes and merging them with emerging technologies. With the hope that one day, these students will collectively become a force for changing the world.

ZERO
HUNGER

2

3 GOOD HEALTH AND WELL-BEING

Community Friendly Health Promotion for the Elderly
Creating an Interactive Intelligent Living Environment for All Ages

1. Through AI pulse wave wearable devices which assist in assessing vascular health healthcare knowledge was promoted among community elders.

2. Through a sensory-stimulating arts course, seniors' life satisfaction was enhanced by transforming sensory stimulation into artistic expression.

Since its initiation in 2020, interdisciplinary collaboration between the Department of Design, the Institute of Digital Learning and Education Research, and the Institute of Biomedical Engineering has been focused on promoting the health of the elderly population. The team of faculty and students surveyed community conditions and senior citizens' needs, establishing links between local care centers and community hospitals. Combining medical and humanitarian care, the team continuously advocates for healthcare expertise, allowing community partners to comprehend the scientific basis of microcirculation measurement and understand the significance of measurement results. They also provide medical and health information through a website.

Furthermore, the team developed various courses, encouraging the elderly to use music and colors. Through these initiatives, seniors find a medium to express themselves, sharing their life narratives through multimedia animations. This engagement not only bolstered participants' cognitive capacities but also elevated their overall life satisfaction. This positive effect ripples into the aging process, enhancing overall physical, psychological, and social well-being. While engaged in community service, the project team collected invaluable user insights and recommendations, which will be integrated into teaching and academic exploration. While engaged in community service, the project team garnered numerous valuable user insights and suggestions. These practical experiences will be applied to instructional courses and academic research. The mental and physical health assessment methods produced by the project will also be extended to the middle-aged and elderly populations within school institutions.

Designing an APP for Health Education

1. Explaining the health education app
2. Health education app voting contest

3

GOOD HEALTH AND WELL-BEING

Led by Professor Cathy Weng, the course "Health Education App Design: Theory and Practice" combines industry and academic resources. Students address societal health needs, creating a digital platform that covers health management, food, parenting, and tech-integrated health. They learn health concepts and app development, designing apps for various user groups. Through this course, students learn about health-related concepts and fundamental iOS app programming. They conceptualized and developed an app that addresses users' health-related needs in the market. Simultaneously, they receive professional skills training, enabling them to apply practical knowledge to real-life scenarios.

The approach fosters practical skills, communication, critical thinking, and teamwork, nurturing future talent with theory-to-practice abilities. The platform is designed for widespread use among adults, children, women, working professionals, and the general public.

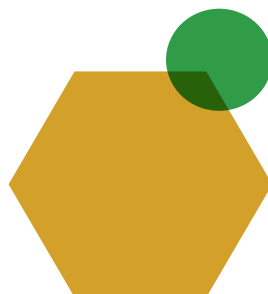# Faculty and Staff Health Management

The health of faculty and staff is the most important and valuable asset of a university. NTUST conducts regular health checks and health promotion activities for faculty and staff every year to create a high-quality healthy, safe and friendly workplace environment. In the future, we will continue to encourage employees to develop self-health management habits through promotion and supervision, and create a healthy and supportive environment. To improve the health examination rate, the subsidies for health check-up costs will be increased from NTD 70 /person to NTD 1,500 /person in 2022. We also encourage colleagues to use leave time to go to off-campus health check-ups. Within two years, we will implement a fully automated health check-up reminder and recording system. Our target is to increase the health check-up rate to 80% within 5 years.
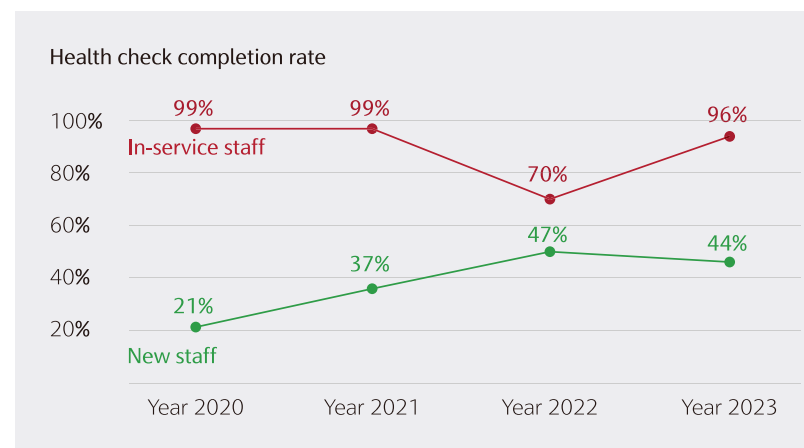
GOOD HEALTH AND
WELL-BEING

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1.Faculty and staff health check
2.Doctor providing health consultation

Health check data analysis		Year 2020	Year 2021	Year 2022	Year 2023
Health check completion rate	In-service staff	Number of individuals eligible for check-ups:507 Actual number of individuals checked:104 Completion rate:21%	Number of individuals eligible for check-ups:528 Actual number of individuals checked:195 Completion rate:37%	Number of individuals eligible for check-ups:428 Actual number of individuals checked:204 Completion rate:47%	Number of individuals eligible for check-ups:446 Actual number of individuals checked:200 Completion rate:44%
	New satff	Number of individuals eligible for check-ups:196 Actual number of individuals checked:195 Completion rate:99%	Number of individuals eligible for check-ups:155 Actual number of individuals checked:154 Completion rate:99%	Number of individuals eligible for check-ups:204 Actual number of individuals checked:144 Completion rate:70%	Number of individuals eligible for check-ups:358 Actual number of individuals checked:346 Completion rate:96%
Health check expenses	In-service staff	Worker health check expense, total NT$41,300 Average700 NT$/person Central Government Agency Employees Total subsidy expenses in NT$157,500 Average 3,500 NT$/person	Worker health check expense, total NT$60,900 Average700 NT$/person Central Government Agency Employees Total subsidy expenses in NT$374,500 Average 3,500 NT$/person	Worker health check expense, total NT$76,500 Average700 NT$/person Central Government Agency Employees Total subsidy expenses in NT$428,512 Average 4,500 NT$/person	Worker health check expense, total NT$66,150 Average1,100 NT$/person Central Government Agency Employees Total subsidy expenses in NT$542,320 Average 4,500 NT$/person
	New satff	Completed prior to employment	Completed prior to employment	Completed prior to employment	Completed prior to employment
Total abnormality rate	In-service staff	98%	92%	80%	93%
	New satff	85%	90%	85%	90%
Top three health issues	In-service staff	Blood pressure abnormality rate:51% BMI abnormality rate:44% Total cholesterol abnormality rate:38%	Blood pressure abnormality rate:72% BMI abnormality rate:56% Total cholesterol abnormality rate:44%	Blood pressure abnormality rate:48% BMI abnormality rate:47% Total cholesterol abnormality rate:35%	Blood pressure abnormality rate:45% BMI abnormality rate:48% Total cholesterol abnormality rate:35%
	New satff	Blood pressure abnormality rate:47% BMI abnormality rate:49% Total cholesterol abnormality rate:32%	Blood pressure abnormality rate:47% BMI abnormality rate:46% Abnormal visual acuity rate:27%	Blood pressure abnormality rate:48% BMI abnormality rate:41% Total cholesterol abnormality rate:29%	Blood pressure abnormality rate:43% BMI abnormality rate:42% Total cholesterol abnormality rate:31%
On-campus medical resources	--	University doctors provide on-site services 3 to 5 times a week, occupational medicine specialists once a month; they are available for health consultations. Medical equipment such as blood pressure monitors, body fat monitors, vision screening, waist measurement, etc. are available for use in the Health Services Division/ Office of Student Affairs.			

Good Health and Well-Being

Health check completion rate

In-service staff: 99% (Year 2020), 99% (Year 2021), 70% (Year 2022), 96% (Year 2023)

New staff: 21% (Year 2020), 37% (Year 2021), 47% (Year 2022), 44% (Year 2023)

Aspire Higher
Transcend Boundaries, Fear No Future

Addressing modern business demands, the traditional single expertise is no longer aligned with the evolving trends in industries and society. Today's focus is on interdisciplinary learning, green technology, and creative innovation. Nurturing a new generation of professionals with social responsibility and global awareness is vital. NTUST has put forth the "π-type Technical and Vocational Talent Cultivation Program". Diverging from the conventional "T-shaped talent", we aim to equip students not only with professional competence and liberal arts literacy, but also with transnational communication skills. Our goal is to help students not only achieve personal success, but also contribute to Taiwan's New Southbound Policy and internationalization efforts.

On the internationalization front, NTUST has been committed to this cause for the past two decades. While in the past, many international students returned to their home countries after graduation, we are now actively encouraging international talents to stay in Taiwan to benefit local industries. This endeavor wills also aid the expansion and establishment of quality industries in Taiwan, creating mutual prosperity. The energy of our university will transcend constraints and realize the vision of a" Technological University without Boundaries".

NTUST has set a visionary plan for 2030 : Aspire Higher. We hope that our students can break free from existing frameworks and use boundless thinking to create their own value, embodying the motto "Transcend Boundaries, Fear No Future".

NTUST Strategy for Promoting Digital and Innovative Teaching

To enhance teaching quality and improve student learning outcomes, the university has been actively advancing problem-oriented learning and innovative teaching courses since 2017. This approach guides students in solving real-world industrial challenges, reinforcing their critical thinking and problem-solving skills.

We regularly organize workshops for new faculty and lectures on diverse-topics to enable educators to grasp and navigate emerging knowledge trends and teaching methods. Additionally, NTUST fosters spontaneous collaboration among instructors across disciplines, encouraging the formation of professional growth communities. Within these communities, instructors can engage in fruitful discussions, brainstorming sessions, and exchange practical experiences related to innovative teaching.

Simultaneously, to incentivize and support teachers in implementing innovative teaching methodologies, we launched the "Innovative Teaching Incentive Scheme", which provides subsidies and rewards for problem-oriented learning (PBL) courses and other innovative teaching modes (such as flipped-classroom, game-based teaching, etc.). Through years of dedicated cultivation and promotion, the number of innovative teaching courses offered per semester has been growing consistently, leading to noticeable positive outcomes within the school community.

Emphasizing the dual importance of teaching and research development, we encourage our faculty to apply for the MOE Teaching Practice Research Projects A set of "Incentive Measures for Implementing Teaching Practice Research Projects" has been established. Under this framework, additional rewards are provided by the university for projects that receive grants.

For instructors, whose projects don't secure funding, the "Subsidy Guidelines for Teaching and Curriculum Enhancement Research Projects" have been formulated to encourage them to propose in-house projects.

These measures empower instructors to employ innovative teaching approaches and undertake pedagogical research, allowing them to evaluate the efficacy of novel teaching methods within the classroom setting. The results of these endeavors can serve as points of reference for matters such as promotion, assessment, or teaching awards. From 2018 to 2023, NTUST has successfully secured grants for a total of 113 the MOE Teaching Practice Research Projects.

QUALITY EDUCATION

Quality Education

Teaching Rewards: Overview		2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year
PBL course award	Number of applications	31 items	27 items	34 items	36 items
	Total subsidy amount	NT$ 1,260,000	NT$ 1,060,000	NT$ 1,209,600	NT$ 1,091,200
Innovative teaching award	Number of applications	26 items	--	2 items	3 items
	Total subsidy amount	NT$ 780,000	--	NT$ 72,000	NT$ 118,400
Digital teaching material subsidy	Number of applications	1 items	12 items	21 items	7 items
	Total subsidy amount	NT$ 54,000	NT$ 398,148	NT$ 882,249	NT$ 198,000

Learning in Teaching, Growing Through Dedication

The USR program "Project LET'S Go! (PLG)" aspires to even the most remote corners of Taiwan, hand in hand with partners representing diverse ethnicities. In parallel, we wish to cultivate an appreciation for the exceptional beauty of Taiwan's remote places.

Our initial idea was quite simple: Bring the best of an immersive English summer school to remote communities. Looking back, the residents, schools, and parents within the community not only cared for and supported us but also became life mentors for our volunteer university students. There was a lovely old lady, named Xiao Lin, who was with us for a decade. Every summer, she prepared the most delicious green mangoes for us. She taught us about the changes in mango harvests each year and the "ancestral secret recipe" for handmade pickling. Although Xiao Lin passed away in 2019, eating the green mangoes has become a ritual of the PLG opening ceremony, ensuring that the community's stories continue to thrive.

Another student commented, "Education shouldn't be confined to the classroom. What sets summer school apart from regular classes is that you're living alongside the children, and you can educate them through everyday life experiences." For us, as volunteer university students, who often come from different countries and cultures, it was an important learning experience. We pondered over the concepts of "mutual betterment" and "mutual learning": Apart from the curriculum that we designed and the English language courses, what else do we need to better communicate and learn from the locals?

By understanding the real nature of schools and communities, we create personalized courses that match learning needs, local culture, and unique industries. Through education, we help students explore and discover their own potential. Our aim is not only to bring in top-notch service-learning activities, but also to make the world accessible to Taiwan online. This way, everyone can learn together and benefit each other!

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1. [August 2020, Chih Shang Junior High] A science-based public education project in which students explore their interests and practice problem-solving

2. [November 2020, Xiaolin Night Festival Visit] Getting in touch with the local community

3. [July 2017, Xiaolin Primary school] An elderly woman chatting with international volunteers

QUALITY EDUCATION

Mentoring Women in Entrepreneurship Cultivating Outstanding, Confident Females

In the past three years, our school has mentored 37 startup teams, 18 of which were spearheaded by female founders. These visionary women entrepreneurs have taken the lead in driving innovation across products and services, with a strong commitment to enhancing people's quality of life.

Case study 1
Tales & Tails Co., LTD

The NTUST incubation center assisted Lucy, in applying for the MOE U-start program. They guided the team through the process of establishing the company Tales & Tails gradually improving its business model. The company embodies the values of educating dogs and caring for people who share their lives with dogs. Tales & Tails dedicates 20% of its profits to social responsibility and education. Their aim is to provide proper dog ownership awareness to the next generation, eliminating the possibility of abandonment.

Thanks to the well-structured guidance mechanisms and entrepreneurial resources offered by NTUST, Tales & Tails was recognized as an outstanding team in the 2020 MOEs -start program We hope to see more social enterprises like Tales & Tails flourish, working together for a brighter future.

Case study 2
NOW 4 DESIGN Co., LTD.

"NOW4 Design," founded by two female students from the Design Department, emerged from their personal calligraphy learning experience. They are dedicated to simplifying the learning curve for beginners. The NTUST Incubation Center supported their application for the MOE U-start program, assisting them in establishing their company. The team received guidance in intellectual property protection, visual identity creation, and core technology safeguarding. Through crowdfunding, they realized their innovative concept of mass-produced calligraphy tools and partnered with renowned companies. The two founders are also actively expanding into international markets, spotlighting Taiwan's cultural creativity worldwide.

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1.Tales & Tails - Dog Family Education Academy: More to live happilywith your dog

2.Calligraphy utensil set developed by NOW4 Design, a convenient too for beginners

Gender Equality

Advocating Gender Equality on Campus

In accordance with Article 6 of the Gender Equality Education Act, NTUST has established a Gender Equality Education Committee, with the following main responsibilities:

1. Consolidating resources, formulating a gender equality education implementation plan, and ensuring the execution and assessment of its outcomes.
2. Planning and organizing gender equality education-related activities for students, faculty, staff, and parents.
3. Developing and promoting gender equality education curricula, teaching methods, and assessment.
4. Crafting regulations for implementing gender equality education and preventing campus sexual harassment.
5. Investigating and handling cases related to this law.
6. Planning and establishing a gender-equal safe campus environment.
7. Promoting gender equality in family and social education within the community.
8. Other gender equality education matters concerning the school or community

In the year 2023, we held a total of 16 sessions including lectures, groups, workshops, and activities, with a combined participation of 1,948 individuals. 13 gender equality education courses were developed, encompassing curriculum, materials, and teaching methods, with 978 individuals enrolled. Additionally, 107 books and 64 audio-visual materials were acquired. Through books and films, the understanding of gender equality among students, faculty, staff, and the community has been enhanced. The campus also features five gender-friendly restrooms, distributed across teaching buildings, administrative areas, and dormitories.
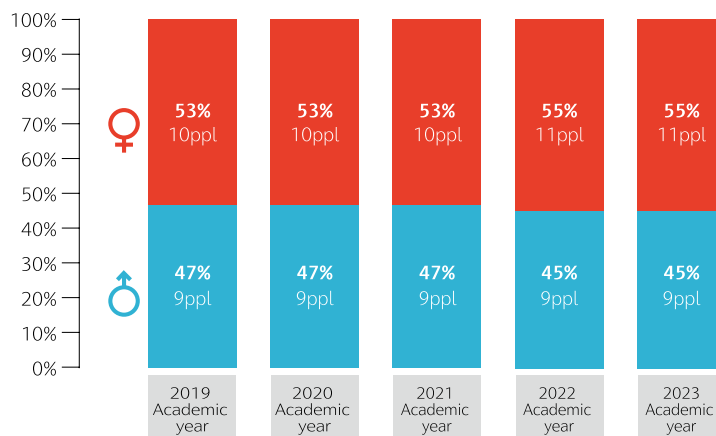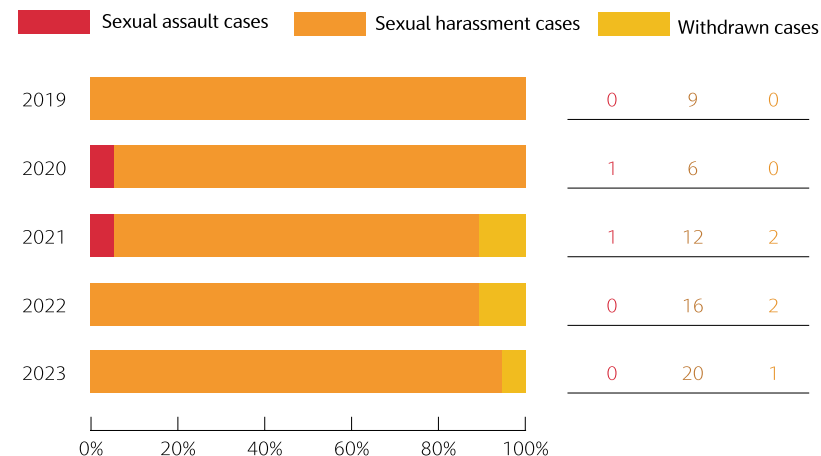
Gender Equality

Member of the Gender Equality Education Committee

	2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year	2023 Academic year
♀	53% 10ppl	53% 10ppl	53% 10ppl	55% 11ppl	55% 11ppl
♂	47% 9ppl	47% 9ppl	47% 9ppl	45% 9ppl	45% 9ppl

Gender-related incidents

- Sexual assault cases
- Sexual harassment cases
- Withdrawn cases

Year	Sexual assault	Sexual harassment	Withdrawn
2019	0	9	0
2020	1	6	0
2021	1	12	2
2022	0	16	2
2023	0	20	1

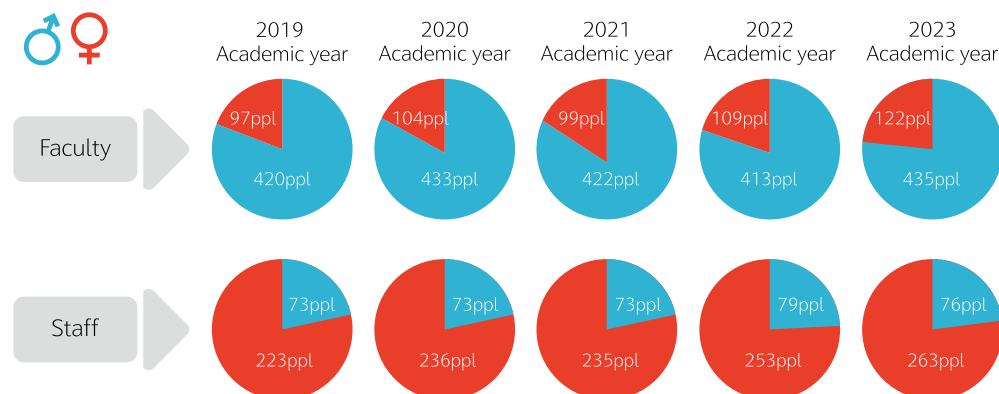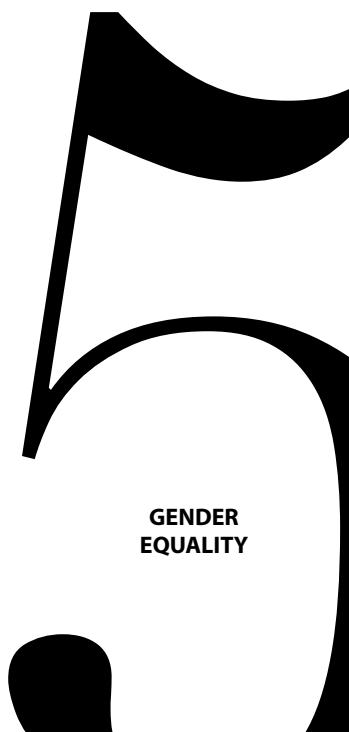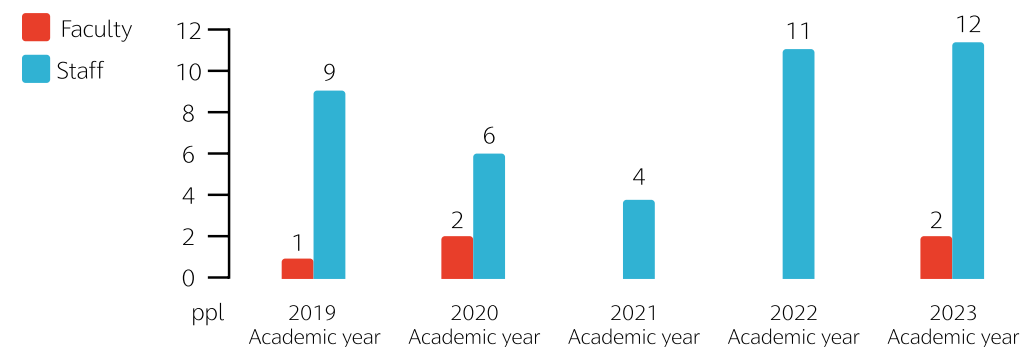| Gender Equality Education Committee Activities		2019	2020	2021	2022	2023
Gender related education & promotion	Courses	12	14	13	13	13
	Lectures	53	33	24	19	16
Gender Equality Committee Sessions	Gender Equality Education Act Gender Equality at Work Act Sexual Harassment Prevention Act	22 session (7 initial assessments, 12 investigation sessions and 3 general meetings)	20 session (7 initial assessments, 10 investigation sessions and 3 general meetings)	38 session (12 initial assessments, 22 investigation sessions and 4 general meetings)	36 session (11 initial assessments, 19 investigation sessions and 6 general meetings)	50 session (11 initial assessments, 32 investigation sessions and 7 general meetings)
Gender-related incidents complaints, applications for investigation or prosecution	Gender-related incidents	1.Sexual assault cases 0 cases 2.Sexual harassment cases 9 cases 3.Withdrawn cases 0 cases	1.Sexual assault cases 1 cases 2.Sexual harassment cases 6 cases 3.Withdrawn cases 0 cases	1.Sexual assault cases 1 cases 2.Sexual harassment cases12 cases 3.Withdrawn cases 2 cases	1.Sexual assault cases 0 cases 2.Sexual harassment cases16 cases 3.Withdrawn cases 2 cases	1.Sexual assault cases 0 cases 2.Sexual harassment cases20 cases 3.Withdrawn cases 1 cases
	Applications for review	Sexual harassment cases2 cases	Sexual assault cases1 cases	Sexual harassment cases1 cases	Sexual harassment cases1 cases	Sexual harassment cases2 cases
	Implementation cost (NT$)	143,007	107,466	262,625	107,466	679,125

Gender Equality and Campus Safety

Establishment of Breastfeeding Rooms and Provision of Breastfeeding Time.

NTUST offers top-notch collective breastfeeding facilities, certified by the Taipei City Government Health Bureau as "excellent breastfeeding room.It is located within the Health and Hygiene Division on the first floor of the Gymnasium. The location of the breastfeeding room is clearly marked, and it is a separate, shielded space designed for discreet and safe breastfeeding.It is designated for breastfeeding purposes and not used for other activities.

Faculty and Staff Gender Distribution

♂ ♀

	2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year	2023 Academic year
Faculty	97ppl / 420ppl	104ppl / 433ppl	99ppl / 422ppl	109ppl / 413ppl	122ppl / 435ppl
Staff	73ppl / 223ppl	73ppl / 236ppl	73ppl / 235ppl	79ppl / 253ppl	76ppl / 263ppl

👶 Number of employees on parental leave without pay

Legend: ■ Faculty ■ Staff

	2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year	2023 Academic year
Faculty	1	2			2
Staff	9	6	4	11	12

(ppl; y-axis scale: 0, 2, 4, 6, 8, 10, 12)

GENDER EQUALITY

Engineers in Action - Construction of Drinking Water Systems in Indonesian Village Schools

1. 2.

1. Installation of a drinking water system in an Indonesian village school

2. Simple filtration and UV disinfection equipment

The collaboration between our partner university Institut Teknologi Sepuluh Nopember (ITS) in Surabaya, Indonesia, and the NTUST Engineers in Action team has spanned six cycles to date. The collaboration addresses local livelihood and environmental issues, aiming to enhance local living conditions. Our primary focus is the improvement of drainage systems and water resource treatment methods. The project nurtures students' problem-solving skills, cross-cultural communication, and a spirit of teamwork, allowing them to apply their academic knowledge to solve real and pertinent engineering challenges.

In rural Surabaya resources are scarce and the lack of infrastructure is evident, with numerous unauthorized constructions lacking access to clean water and toilets. Our team focuses on the construction of basic sanitation infrastructure, as well as on environmental and hygiene education.

For instance, the primary school of the Indonesian fishing village of Bulak was lacking clean drinking water. Students and teachers regularly bought bottled water, which strained finances and led to too much waste. To address this, our Engineers in Actions team set up a simple drinking water system using filters and UV disinfection. When the program was completed, they taught community members and students how to use the system so that maintenance could be left in in the hands of local residents.

CLEAN WATER AND SANITATION

Clean
Water
and
Sanitation

Rainwater Storage System

With support from the Water Resources Agency, NTUST has taken steps to implement a "Rainwater Storage System Construction Project" to reuse rainwater. The Fourth Teaching Building, the International Building, and Engineering Building II were equipped with rainwater storage systems. The process involves collecting rainwater in water towers or storage tanks, followed by sedimentation and filtration. The treated rainwater is then repurposed for various uses such as flushing toilets, watering lawns, and refilling ponds. For the Engineering Building II, a system without the need for electricity is utilized for irrigation, while the Fourth Teaching Building employs an automatic water replenishment mechanism to refill the turtle pond in front of the building based on water level difference. To raise awareness and promote energy conservation education, information boards are placed around these buildings.

Water Consumption	2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year	2023 Academic year
Tap water consumption (million litres)	396.860	390.186	362.139	411.862	446.625
Rainwater retention system	2.20181	0.26688	0.17687	0.13015	0.105

The rainwater storage system of the Second Engineering Building

Innovative Low-Energy Water Purification System

SDG Goal 6 focuses on achieving "universal and equitable access to safe and affordable drinking water for all" by 2030. In pursuit of this goal, a team of students and professors from the Chemical Engineering Department teamed up with Dong Rui Materials Science Company. They designed a portable solar-powered water purification device that utilizes tubular membrane filtration. This system combines solar photovoltaic and tubular membrane water purification technologies to address both river water contamination and the recycling of industrial wastewater.

This innovation has found practical application in rural areas, where it effectively generates clean drinking water, and thus contributes to the realization of SDG Goal 6.

This approach for purification was adopted for several reasons: its low energy consumption due to solar photovoltaic application; minimal environmental impact as the used filtration membranes can be reused through backwashing; and its resistance to clogging, facilitated by the perpendicular alignment of the filtration direction and fluid flow. The series of experiments began with the purification of water from the Xindian River. After a sequence of biological analyses, the successful enhancement of river water quality was confirmed. Subsequently, the system was employed to treat factory wastewater containing silver. The results showed that the silver was effectively separated, underscoring the practical manifestation of circular economy principles.

Finally, this water purification system was installed in the Tabalong Cultural Parkin in Hualien's Guanfu Township. Through this project, purified spring water was successfully purified to meet drinking water standards. A water output of over 1.4 tons per hour could be achieved, ensuring ample supply for the park's needs. The solar-powered, tubular membrane water purification system shows great potential for the future, and is expected to find use in various fields beyond water purification.

1.

2.

1.The picture shows the actual solar tube membrane water purification system in Tafulong. The whole system is powered by solar energy

2.The picture on the left shows a sample of concentrated silver particles from industrial wastewater after tubular membrane separation and purification. The picture on the right shows pure water after purification and filtration of natural spring water

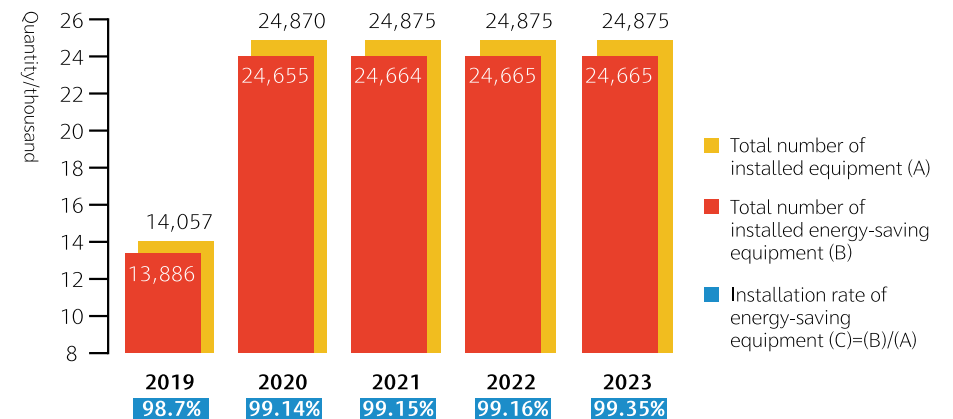Raw liquid | Silver nitrate solution | Filtered water | Purified water | Natural spring water

Energy Conservation and Carbon Reduction

NTUST has established an Energy Saving Promotion Team and formulated energy policies to achieve the goals of energy conservation and carbon reduction. Leveraging information and communication technology, we have implemented a campus energy management system. 2020 – 2022 an increasing number of energy saving devices were installed on our campus. Through real-time data collection, this system assists in auditing campus energy usage and establishing management protocols. By employing automated control, we aim to reduce energy consumption and lower carbon dioxide emissions.

We have installed energy recovery systems for elevators in high-rise buildings, recycling energy back to the power cabinets for elevator reuse. For lighting fixtures and air conditioning equipment that have reached their replacement age, we allocate budgets annually to upgrade and replace them, aligning with the objectives of sustainable development and energy conservation.confirmed.

Resource consumption	2019	2020	2021	2022	2023
Total electricity consumption (kWh)	22,089,311	22,153,280	23,006,200	23,557,920	24,284,154
Total gas consumption (M3)	267,813	266,509	329,670	442,043	415,068
Total gasoline consumption (L)	959	936	561	1,090	1,170
Total diesel consumption (L)	0	0	0	0	0
Floor area of main buildings on campus (M2)	208,992.8	239,865.51	243,433.16	243,433.16	243,433.16
Total energy consumption (GJ)	88,520.47	88,706.34	93,879.71	99,646.30	101,359.98
Energy intensity (GJ/m2)	0.4236	0.3698	0.3856	0.4093	0.4164

Rate of installed energy-saving equipment (with energy efficiency label)

Quantity/thousand

	2019	2020	2021	2022	2023
Total number of installed equipment (A)	14,057	24,870	24,875	24,875	24,875
Total number of installed energy-saving equipment (B)	13,886	24,655	24,664	24,665	24,665
Installation rate of energy-saving equipment (C)=(B)/(A)	98.7%	99.14%	99.15%	99.16%	99.35%

- Total number of installed equipment (A)
- Total number of installed energy-saving equipment (B)
- Installation rate of energy-saving equipment (C)=(B)/(A)

Solar Photovoltaic Power Generation System

In alignment with the government's policy to promote solar photovoltaic power generation, NTUST began implementing solar photovoltaic systems from the year 2018. Six buildings on campus, i.e. two student dormitories, the Student Activity Center, Teaching Buildings II and IV, and the Administration Building were selected for the installation. The generated electricity is sold to the Taiwan Power Company. This initiative not only helps to reduce electricity costs, but also repurposes rooftop space, effectively lowering expenses related to roof leak repairs. Furthermore, through solar photovoltaic leasing contracts, participating companies set up solar-powered wind and rain corridors near the Student Activity Center, the Cafeteria, and the Post Office, connecting key areas of the campus. Apart from providing convenient pathways, these corridors incorporate solar photovoltaic power generation to channel energy back to the electrical cabinets, enhancing the benefits of energy recycling and reuse.

Solar photovoltaic power generation system
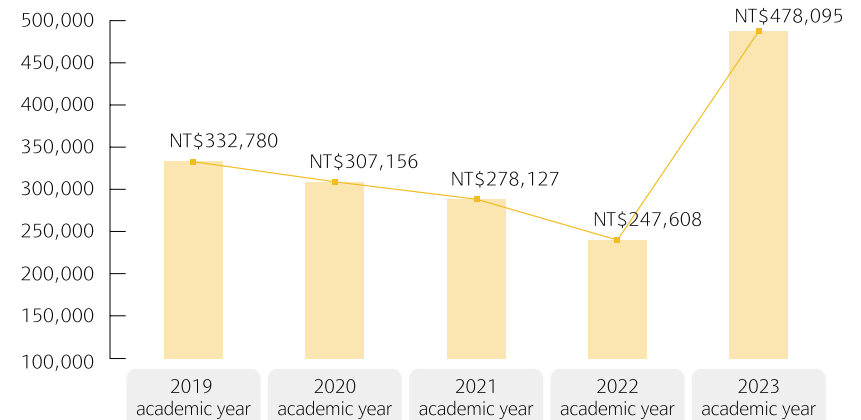
Academic year	2019 academic year	2020 academic year	2021 academic year	2022 academic year	2023 academic year
Roof leakage prevention	NT$0	NT$0	NT$0	NT$0	NT$0
Solar power revenue	NT$332,780	NT$307,156	NT$278,127	NT$247,608	NT$478,095

Solar power revenue

Replacing Old Air Conditioning Systems

Replacement of the old air conditioning system

During the summer months, the air conditioning system accounts for 50% to 55% of NTUST's total electricity consumption. Thus, enhancing the energy efficiency of the air conditioning system is a critical aspect of our energy-saving efforts. Through human-machine control interfaces, the system's operation status can be monitored and coordinated scheduling controls and temperature settings can be implemented. Monitoring the operation of the chilled water system is a crucial task, and adjusting the operation of the chillers based on temperature settings through automatic load shedding is essential for achieving energy savings.In 2019, NTUST invested approximately NTD 8.653 million to replace outdated chillers in three buildings (International Building, Comprehensive Research Building, Audio-Visual Hall). This initiative is estimated to save a total of 395 kWh of electricity, achieving a savings rate of 47.5% and contributing to an annual reduction of approximately 210 tons of CO_2 emissions.

AFFORDABLE
AND
CLEAN ENERGY

7

Elevator Power
Recovery System

Elevators are recognized as substantial energy-consuming systems. In order to maintain the stable ascent of the elevator, the traction machine within the elevator operates in a braked state. However, during braking, excess electrical energy is generated. Elevators often use resistive loads to consume this excess energy, which easily leads to an increase in cabinet temperature, resulting in energy loss.

To recover and reuse this excess energy, NTUST evaluated energy-saving measures for various elevators, based on the recorded elevator operating hours. Four elevators with high operating hours in Student Dormitory II and III were selected for the implementation of an elevator energy recovery system to cyclically channel the energy back to the cabinet for reuse.

With the energy recovery systems, average of 122 kilowatt-hours (kWh) of electricity is recovered each month, amounting to approximately 5,800 kWh annually. Furthermore, the installation lowers the temperature in the machine room, so that the 5 kW air conditioning units in the elevator machine rooms could be dismantled, saving around 44,000 kWh of electricity consumption per year.

Overall, this initiative results in an annual total energy saving of about 50,000 kWh and an approximate carbon reduction of 26.5 tons of CO_2 per year.

Elevator power recovery system

AFFORDABLE AND CLEAN ENERGY

Advanced Energy Storage Research at the Sustainable Electrochemical Energy Development Centre

Taiwan's energy transformation policy is moving toward the goal of sustainability and reducing carbon emissions, and even toward net zero.The NTUST Sustainable Electrochemical Energy Development Centre (E ∞ Center) pursues research on the development of cutting-edge energy materials and energy storage systems, and promotes the application of these technologies in green buildings, energy storage systems and transportation.

Currently, the performance of lithium-ion batteries cannot yet meet the requirements of high energy and high safety applications. The Sustainable Electrochemical Energy Development Centre is dedicated to the development and application of novel anode-free batteries. Through the optimization of electrolytes and the design of artificial passivation films, the energy density of the batteries is expected to double, while also reducing material, energy, and safety costs in production. The research at the Sustainable Electrochemical Energy Development Centre closely aligns with industry needs, showcasing fruitful achievements in industry-academic collaboration and technology transfer.
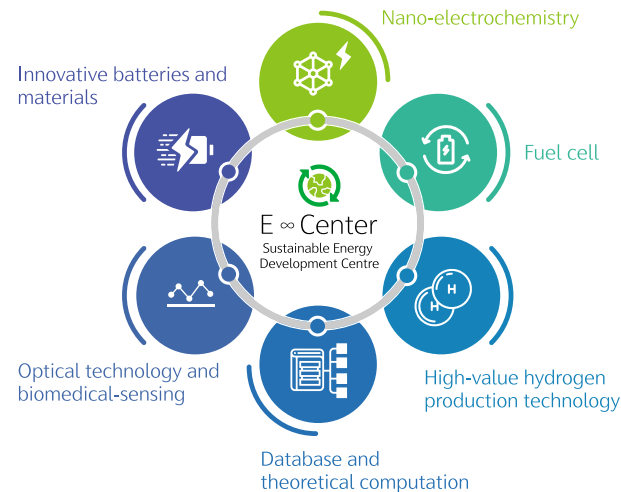
The research areas of the E ∞ Center includes nano-electrochemistry, battery materials, fuel cells, spectral technology, high-value hydrogen production, and theoretical calculation
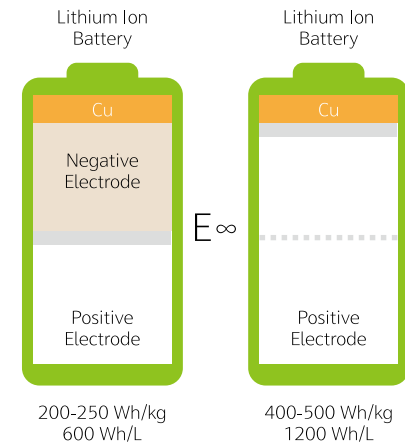
Anode- battery design architecture and characteristics

Currently, over 50% of the research team's members are students from developing countries, with more than 20% being women. The team is committed to practicing gender equality (SDG 5) and promoting policies that encourage exceptional research talents from developing countries, addressing inequalities (SDG 10).

Affordable and Clean Energy

Promoting Student Entrepreneurship

NTUST is strongly committed to fostering student entrepreneurship. Through the NTUST Incubation Center, the university has established a comprehensive innovation and entrepreneurship counseling mechanism. Capitalizing on our extensive connections with various industries, we effectively link industrial resources to provide support for student teams to enter the market with their ingenious ideas, innovative technologies, and services. In the past three years, the university has effectively facilitated the establishment of 18 new companies while also drawing the interest of numerous investors. This collective effort has resulted in a substantial capital accumulation of over NTD 23 million. Importantly, this accomplishment has secured the foundation for the continued growth and development of these startups.

Case 1
【Tensor Tech Co., LTD】

"We are set to launch the first microsatellite into space that utilizes a spherical motor." The Tensor Tech team initiated the development of a space-saving spherical motor during their high school years. Upon joining NTUST, they received guidance from our Incubation Center The team was assisted in refining their business model and encouraged to participate in government entrepreneurship programs such as FiTI (by the National Science and Technology Council) and U-start by the (Ministry of Education). They successfully secured an initial startup capital of around NTD 3 million and garnered attention from multiple venture capital firms and angel funds. The team channeled these funds to drive the commercialization of the technology. The culmination of their years of hard work was the launching of their device alongside the SpaceX low-orbit satellite in 2022. These four determined young individuals are just beginning to pursue their dreams!

The four Tensor Tech founders

Case 1
【GTA Robotics Co., LTD.】

"I believe in an idea of education, where students learn on their own initiative, so that they will start to learn from scratch, build up knowledge, and become more skilled!!" GTA was initiated by Mechanical Engineering student Tsai Sheng En. With the support of our Incubation Center, Tsai Sheng En secured the 2019 MOE U-start program grant to kickstart his entrepreneurial idea. With guidance from experienced professionals in various business fields, he skillfully built his brand and reached out to customers, continuously improving his business strategy and market position. Through the development of humanoid robot teaching materials and curriculum modules, GTA Robotics leads students in organizing and participating in competitions. The student teams achieved remarkable results in international competitions. In 2021, they GTA Robotics received a 1 million NTD award from the MOEs U-start program, the highest award nationally.

The founder of GTA Robotics Tsai Sheng En operates a self-developed humanoid robot in an international competition

Career Services - Guiding Students into the Start of Their Professional Journey

The Career Counseling Division of the NTUST Student Affairs Office offers students a variety of career guidance services. We invite certified career consultants to provide individual guidance on topics such as personal career development, compiling of resumés, and simulated interviews. Additionally, career assessment tools and analysis are offered to help students plan their future career paths at an early stage. In our mentorship program, we invite HR managers and senior executives from major companies to provide individual guidance to help students in understand the current employment market. Furthermore, career-related workshops and seminars are held every semester, covering topics such as industry trends, job-seeking skills, and the cultivation of workplace soft skills. Through diverse career counseling services, students are aided in exploring and understanding themselves, clarifying their future employment and career directions, and effectively preparing for their careers.

1. Students consulting with corporate HR officers
2. Students participating in a career workshop

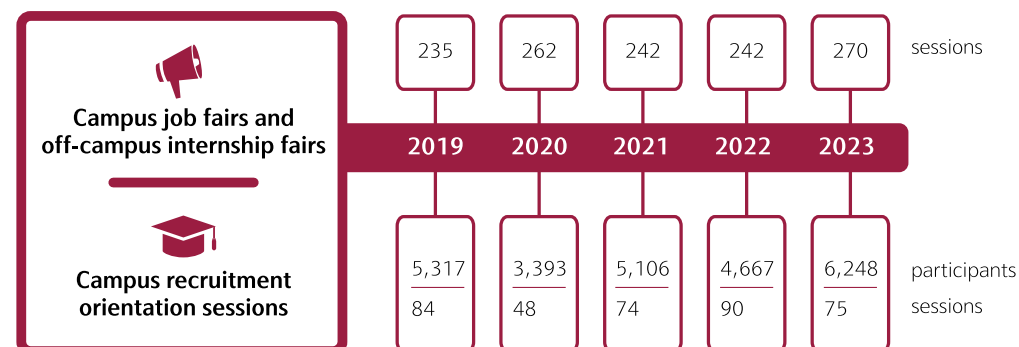| Career consultation/ Person-time	2019	2020	2021	2022	2023
● Professional consultation	84	85	18	31	20
Career lecture					
● Number of sessions	5	5	8	7	6
● Person-time	349	166	250	199	271
Career workshops					
● Number of sessions	4	1	3	7	4
● Person-time	114	30	68	164	99
● Interviews and consultations	148	153	160	159	198
● Career Assessments	0	86	64	67	49
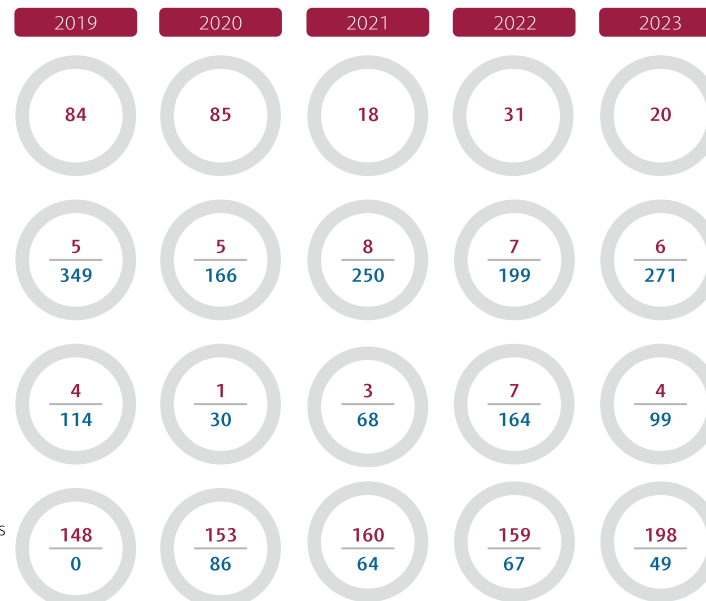
Career Services –
Recruitment Fairs and Career Seminars

1.Opening ceremony
2.On-site screenshot

1.

2.

Campus Recruitment Fairs

In March 2023, NTUST organized the annual Campus Recruitment and Off-Campus Internship Expo, such as TSMC, Lam Research, ASML, the critical semiconductor industry supply chain of Taiwan. In addition, renowned enterprises such as Foxconn, DELTA, HIWIN, Quanta, ASUS, LITE-ON, Trend Micro, E.SUN Bank, SKBank, Taiwan Cooperative Bank, among many others. In total, the 2023 fair encompassed 270 booths with 213 participating companies, and nearly 3,100 students attending the event.

	2019	2020	2021	2022	2023	
Campus job fairs and off-campus internship fairs	235	262	242	242	270	sessions
Campus recruitment orientation sessions	5,317 / 84	3,393 / 48	5,106 / 74	4,667 / 90	6,248 / 75	participants / sessions

DECENT WORK AND ECONOMIC GROWTH

48

Career Services — Off-Campus Internships

Implementing Off-Campus Internships

In accordance with MOE policies, all NTUST departments have formulated off-campus internship programs aimed at providing students with diversified flexible workplace experiences. Students have the option to do internships of 320 hours for 3 credits during the summer break or participate in off-campus internships during the semester for 1- 9 credits. We have also planned flexible overseas internships for graduate students as part of our student career planning services.

Promoting an Integrated Off-Campus Internship Platform

The "NTUST Career Development Website, set up by the Career Counseling Division of the Office of Student Affairs, integrates various sources of internship requirements from companies. Through this website, students can easily choose the companies they want to intern in and understand the process of taking internship courses for credit.

	2019	2020	2021	2022	2023	
Undergraduate students	609	486	371	302	234	participants
Off-campus internships						
Graduate students	156	84	78	101	119	participants
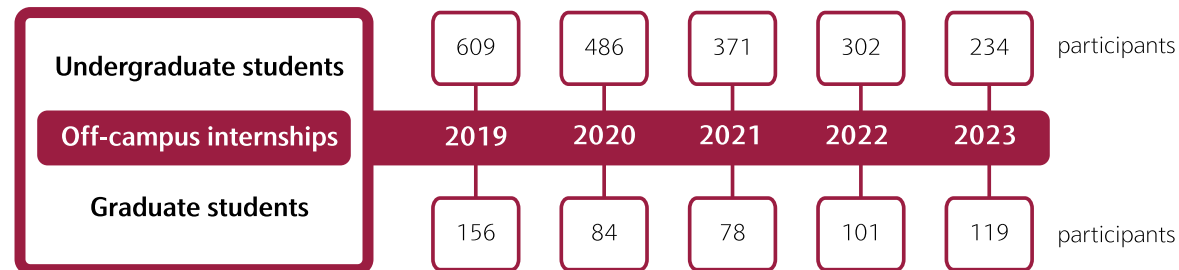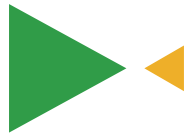
Industry-University Cooperation Promoting Forward-Looking Innovation and Research

Domestic Technology Exhibitions

- **2023 National Innovation Award**
  "Laser Diffraction System for Label-free Cell Counting Automatic Flow Circulating Tumor Cell Cytometry," developed by Professor Chen Jem-Kun, Materials Science

- **2023 Bio Asia-Taiwan Biotechnology Exhibition:**
  Two NTUST teams participated, with faculty members from Biomedical Engineering, and Electronic and Computer Engineering departments. The showcased technologies included development of thermal and dissolvable microcarrier for cell recovery, and Non-Displaced Rib Fracture Inspector (Frac See - I see U).

- **2023 Taiwan Future Tech Pavilion (FUTEX)**
  Two NTUST projects won the prizes:
  - "Integrating Digital Gray Scale and Off-Focus Methods to Stereolithography 3D Printing Process to Rapidly Manufacture Uniform Microlens Array with High Numerical Aperture and High Image Resolution," developed by Professor Chen Pin-Chuan, Mechanical Engineering.
  - "All-Paper-Based Moisture-Powered Battery" developed by Professor Yeh Li-Hsien, Chemical Engineering.

On-Campus Research Centre

National Science and Technology Council Industry-Academia Research and Development Center Plan :

- NTUST -Team: Professor Chen Jem-Kun's team
- The planned establishment of the Artificial Intelligence and Internet of Things Research Center jointly by LILIN and Taiwan Tech.
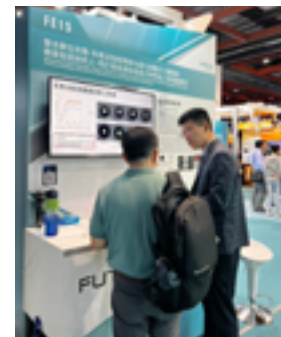

1.2023 BIO ASIA : Professor Chen Yung-Yao's team
2.2023 National Innovation Award : Professor Chen Jem-Kun's team
3.2023 Future Technology Award: Professor Chen Pin-Chuan's team
4.2023 BIO ASIA : Professor Tsai Hsieh-Chih's team

Item	2019	2020	2021	2022	2023
Patents — Patent applications	89items	147items	131items	142items	92items
Patents — Approved patents	90items	71items	97items	99items	101items
Patents — Valid patents	873items	735items	693items	708items	718items
Technology transfer agreements	197items	159items	177items	234items	216items
Actual revenue from intellectual property	NT$44,002,714	NT$46,574,635	NT$53,982,619	NT$67,225,508	NT$73,820,439
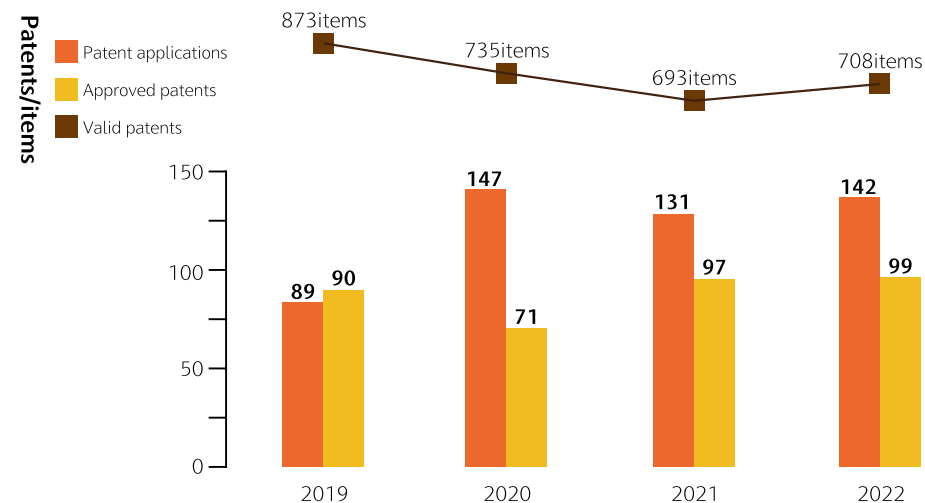
Industry, *Innovation* and **Infrastructure**
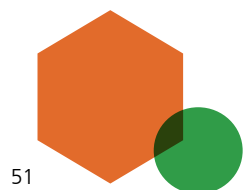
Highlights in Applied Energy Research

RANGE HOOD CAPABLE OF RESISTING DRAFT

Patent Publication No.：I408317
Representative of the inventor：
HUANG, RONG FUNG (TW)
Department of Mechanical Engineering

This patent is one of the licensed patents list. From 2011 to 2020, 12 patent license agreements were signed with a total patent license fee of NTD24.21 million.

BUCKLING RESTRAINED BRACE WITH STEEL RESTRAINER

Patent Publication No.：I369434
Representative of the inventor：
CHEN, CHENG CHENG (TW)
Department of Civil and Construction Engineering

From 2012 to 2023, 55 patent license agreements were signed with a total patent license fee of NTD6.93 million.

LATERAL DEFORMATION RESTRAINT DEVICE OF THE FLANGES OF AN H-SHAPED STEEL BEAM

Patent Publication No.：I724973
Representative of the inventor：
CHEN, CHENG CHENG (TW)
Department of Civil and Construction Engineering

Signed a patent license agreement in 2021, the patent license fee of NTD 500,000.
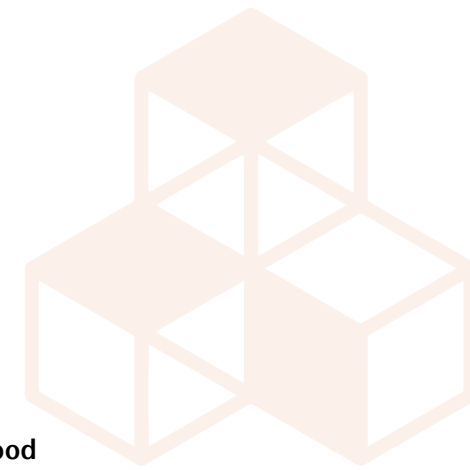
# Highlights in Applied Energy Research

Beneficial Effects of Amorphous Metallic Coating with High Power Impulse Magnetron Sputtering on Property Improvements of Diamond blade

Patent Publication No.：I718755
Representative of the inventor：CHU, JINN (TW)
Department of Materials Science and Engineering

This patent is one of the licensed patents list. Signed a Package license agreement in 2020,the patent license fee of NTD1.2 million.
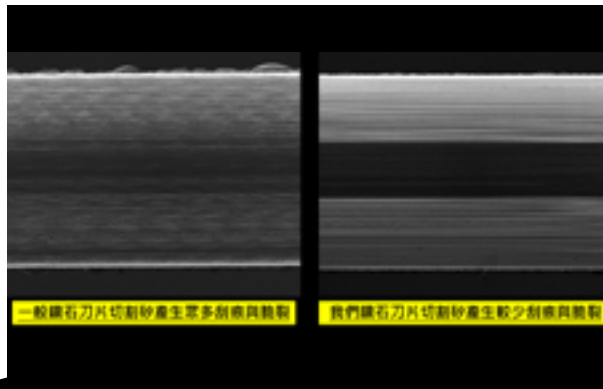
REVERSE OBLIQUE AIR CURTAIN EXHAUST CABINET

Patent Publication No.：I365768
Representative of the inventor：
HUANG, RONG FUNG (TW)
Department of Mechanical Engineering

Signed a patent license agreement in 2011, the patent license fee of NTD1.6 million and the royalty fee of NTD2.43 million.
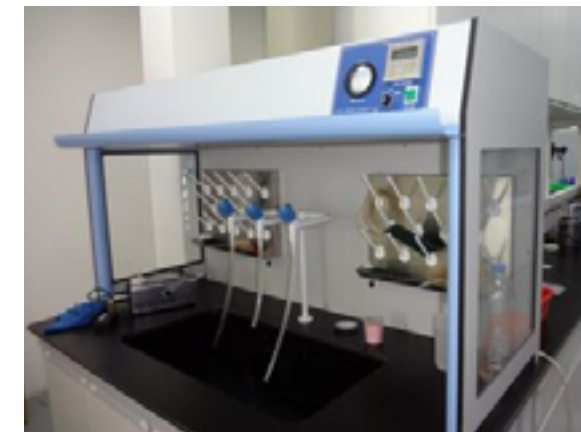

Worktable suction hood

Patent Publication No.：M581945
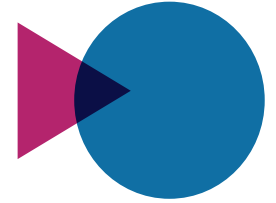Representative of the inventor：
HUANG, RONG FUNG (TW)
Department of Mechanical Engineering

Signed a patent license agreement in 2019, the patent license fee of NTD 577,000 and the royalty fee of NTD13,550.

Urban and Rural Collaboration

1.

2.   3.

1. Guanshan summer: vacation camp: An after-school tutoring classroom of the Xinfu Tribe of the Ami nationality
2. Yangmingshan Cherishing the Path to the Moutai Blossom Exhibition – Opening Blessing Ceremony by Bunun Priestess Hu Jin-niang
3. Winter vacation camp High School Students help Guanshan Fengquan Community prepare for the lantern parade

Taiwan's capital-concentrated economic development pattern has led to a continuous widening of urban- rural gap. Remote areas face four major vulnerabilities: 1. Access to new knowledge, 2. Information acquisition, 3. Diversified professional skills, 4. Societal connectivity and dynamics

The NTUST USR project "I-Villages Plus: Urban-Rural Collaboration Deepening Project," envisions connecting urban and rural areas, nurturing talents, and achieving sustainable development. The project engages in long-term collaboration with local industries, government agencies, and academia, aiming to improve the situation in disadvantaged rural areas. The "I-Villages Plus Project" aims to create stronger connections between urban and rural areas, nurture talents, and promote sustainable development. The project involves working closely with local industries, government agencies, and educational institutions over a long period of time. Its goal is to address challenges faced by remote regions. The project takes the Guanshan Community, located in the Central
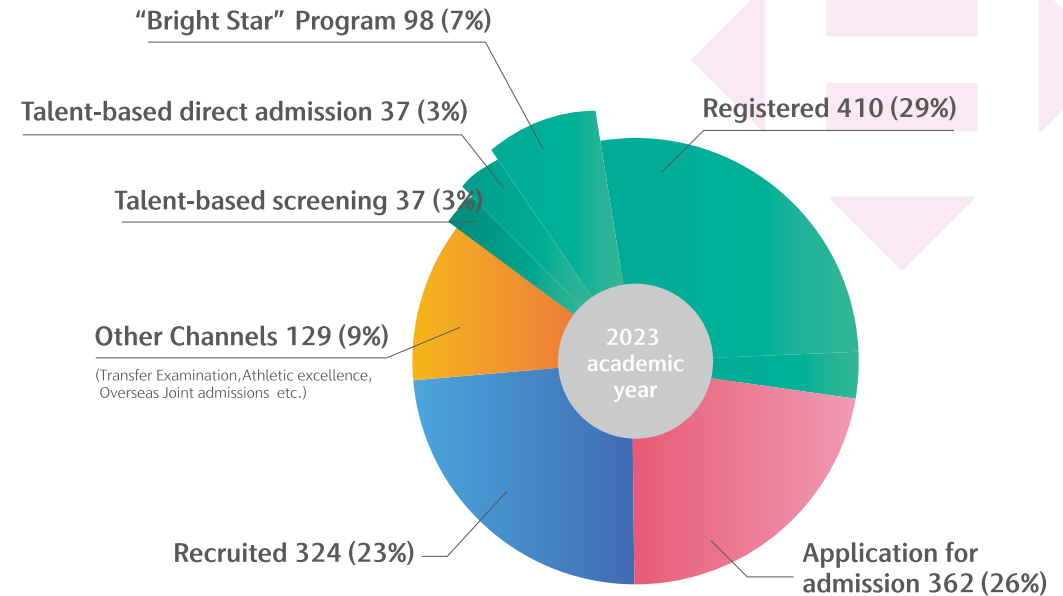
Rift Valley, as an "in-depth paradigm. Here, the project seeks to bring about significant changes in how the community is managed. A key concept is "field mobility," which serves as the foundation for revitalization efforts. The aim is to have a lasting positive impact by fostering long-term impact of local partners in urban areas. The project's central theme of "model revitalization" involves taking successful models from one place and applying them to neglected areas that lack knowledge and resources. This process is called "model diffusion." By doing this, the project facilitates the sharing of knowledge across different domains, helping communities that have been neglected. To further strengthen partnerships and collaborations, the project also seeks external resources and expertise. This strategy helps establish connections with third-party organizations, creating a network of relationships that benefit all stake-holders.

Diverse Admission Management for Disadvantaged Students

Compared to comprehensive universities, technological universities like NTUST offer a broader and more diverse range of admission modes and channels. These direct admission for outstanding technical talents, admissions through special programs like the vocational high school "Bright Star" program, or admissions based on achievement in sports among others. Within most of these admission channels, there are reserved quotas for students from economically or culturally disadvantaged backgrounds.
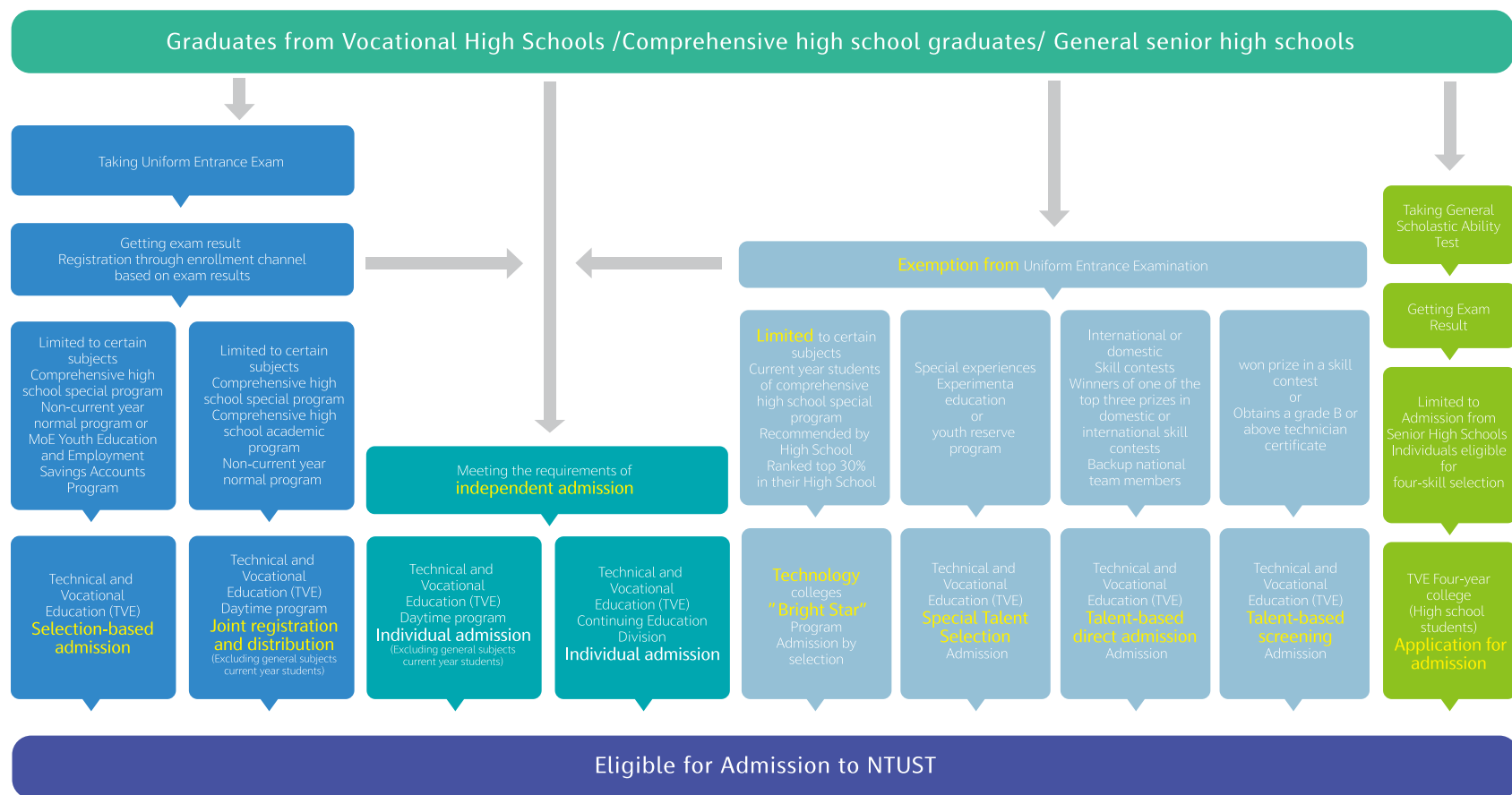Examples:

- Students from lower or moderate-income families, indigenous students and students from outlying islands may be admitted through the Four Skills Selection Program.
- Students with unique expertise in certain fields, distinctive backgrounds, or exceptional achievements can enter NTUST through the special talent admission joint enrollment channel.
- Students who have won awards in technical skills competitions, hold technician certificates at Level B or above, or have passed general technical professional exams can apply for admission through the outstanding technical talent or talent selection pathways.
- Outstanding graduates with potential of any vocational high school can be recommended for admission through the "Bright Star" - program.
- Enrollment quotas for students with physical and mental disabilities are provided.
- Students who are skilled or show promise in a specific sport can apply for admission based on their sports performance.

"Bright Star" Program 98 (7%)

Talent-based direct admission 37 (3%)

Talent-based screening 37 (3%)

Registered 410 (29%)

Other Channels 129 (9%)
(Transfer Examination,Athletic excellence, Overseas Joint admissions etc.)

2023 academic year

Recruited 324 (23%)

Application for admission 362 (26%)

- Diverse admission channels are available to admit economically or culturally disadvantaged students or students with special backgrounds.
- In 2023, the distribution of enrollment methods was as follows: registration-based allocation 29%, application-based admission 26%, selective admission 23%, vocational high school special recruitment 7%, technical excellence 6%.

Diverse Admission Management for Disadvantaged Students

Graduates from Vocational High Schools /Comprehensive high school graduates/ General senior high schools

Taking Uniform Entrance Exam

Getting exam result
Registration through enrollment channel based on exam results

Exemption from Uniform Entrance Examination

Taking General Scholastic Ability Test

Getting Exam Result

Limited to certain subjects
Comprehensive high school special program
Non-current year normal program or MoE Youth Education and Employment Savings Accounts Program

Limited to certain subjects
Comprehensive high school special program
Comprehensive high school academic program
Non-current year normal program

Limited to certain subjects
Current year students of comprehensive high school special program
Recommended by High School
Ranked top 30% in their High School

Special experiences
Experimenta education
or
youth reserve program

International or domestic
Skill contests
Winners of one of the top three prizes in domestic or international skill contests
Backup national team members

won prize in a skill contest
or
Obtains a grade B or above technician certificate

Limited to Admission from Senior High Schools
Individuals eligible for four-skill selection

Meeting the requirements of **independent admission**

Technical and Vocational Education (TVE)
Selection-based admission

Technical and Vocational Education (TVE)
Daytime program
Joint registration and distribution
(Excluding general subjects current year students)

Technical and Vocational Education (TVE)
Daytime program
Individual admission
(Excluding general subjects current year students)

Technical and Vocational Education (TVE)
Continuing Education Division
Individual admission

Technology colleges **"Bright Star"** Program Admission by selection

Technical and Vocational Education (TVE) **Special Talent Selection** Admission

Technical and Vocational Education (TVE) **Talent-based direct admission** Admission

Technical and Vocational Education (TVE) **Talent-based screening** Admission

TVE Four-year college (High school students) **Application for admission**

Eligible for Admission to NTUST

56

Resource Classrooms —
Inclusive "Barrier-Crossing" Multidimensional Empowerment

1. We conduct workshops and activities related to special education, promoting accurate understanding and assistance for students with disabilities.
2. Resource classrooms are equipped with adjustable desks and chairs to accommodate different wheelchair types and student body shapes
3. The entrance and exit of each building are equipped with smooth and non-slip barrier-free ramps

1.

2.   3.

REDUCED INEQUALITIES

Our resource classrooms aim to create a homely atmosphere for students - relaxed, comfortable, harmonious, and friendly places. Through creating a pleasant atmosphere, we create a sense of trust between students. We provide facilities, equipment and services for students with physical and mental disabilities to help them integrate into campus life and environment. The program has three axes:
Accessible environment, academic and psychological support:

1. Accessible Environment: All teaching and administrative buildings have accessible ramps at entrances, as well as accessible toilets and elevators. Our student dormitories feature accommodating rooms with equipment tailored to various disability needs. The Office of Academic Affairs coordinates the use of resource classrooms, arranging classroom locations and adjustable desks and chairs for students with special needs.

2. Academic Support: All students have to undergo English proficiency and physical fitness tests before enrollment. For students with disabilities, our language center and sports center collaborate to adjust assessments as needed. NTUST also offers adapted physical education courses, with content and evaluation methods adjusted based on individual disability conditions. Instructors are encouraged to provide lecture notes or electronic materials in advance, and peer support within classes is arranged if necessary during lectures.Major exams are also adjusted according to students' needs, including special examination rooms, extended time, and assistive devices.

3. Psychological Support: We organize workshops, university wide special education campaigns, and counseling services each semester. These endeavors aid students with disabilities in becoming part of campus life, and help to promote deeper understanding for students with special needs within the entire university.Individual counseling, group counseling, and visits from psychiatrists are available through appointment, fostering a holistic approach to psychological well-being.

Capacity Building Program	2019	2020	2021	2022	2023
Assisting students to apply for support schemes (daily care, class reminders, real-time transcription services, etc.)	129 participants	250 participants	408 participants	268 participants	521 participants
Application for academic assistance	469 participants	495 participants	699 participants	639 participants	377 participants
Promotion of friendly campus	277 participants	337 participants	700 participants	789 participants	1,300 participants
	14 sessions	12 sessions	9 sessions	6 sessions	15 sessions
Adaption to campus life	291 participants	136 participants	300 participants	101 participants	141 participants
	2 sessions	4 sessions	4 sessions	3 sessions	4 sessions

Reduced Inequalities
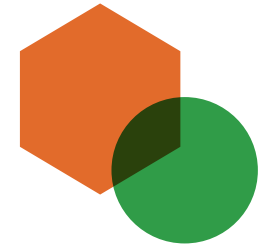
Community Revitalization and Community-Based Disaster Prevention

NTUST is located in the Gongguan area in the South of Taipei City. The area includes several urban settlements with cultural significance, such as the Treasure Hill Village and the Toad Hill Settlement. Issues like community disaster prevention, cultural preservation, and architectural revitalization have repeatedly garnered public attention. The project "Community Revitalization, Activation, and Resilience Enhancement - A Case Study of the South Gongguan Settlement", led by Professor Chiu Chien-Kuo from the Department of Construction Engineering, has been dedicated to promoting disaster prevention in the Gongguan area since 2020. The project aims to convey community-based disaster prevention concepts to residents and raise their awareness about disaster preparedness.

Building upon previous research results, Professor Chiu's initiative merges urban disaster prevention with the conservation of cultural heritage. By repurposing the historic structure "Anzhai No. 3," the project seeks to forge stronger bonds between the entire community and its inhabitants. Over time, the project's reach will extend to neighboring locales, facilitating the implementation of disaster prevention measures, and progressively achieving a comprehensive disaster readiness strategy.

To enhance NTUST's engagement in this initiative, students are encouraged to participate in annual disaster prevention training. Residents are invited to partake in public discussions, contribute to environmental assessments, and enroll in informative courses. The range of activities encompasses various tasks, such as creating models of the neighborhood, designing evacuation guides, learning about intelligent environmental monitoring, and acquainting themselves with disaster prevention robots. These endeavors are geared towards fortifying the community's self-reliance in disaster prevention, bolstering disaster resilience, and fostering the principles of sustainable development.

1. The Ministry of National Defense and local residents near-by were invited to review the history of the historic building "Anzhai No.3" and share the achievements of disaster prevention promotion
2. Through environmental assessment and disaster prevention measures, residents are guided to understand disaster potential areas and plan escape routes

11 SUSTAINABLE CITIES AND COMMUNITIES

Sustainable Cities and Communities

The promotion of sustainable urban and rural practices was expanded overseas as well. In 2020, the project initiated cross-disciplinary collaboration with Nepal. Students utilized their architectural skills and local building materials to assist in constructing disaster-resistant housing and rehabilitating hazardous slopes in the local area. Apart from enhancing environmental safety and living quality in remote regions, this endeavor also broadened students' understanding of diverse architectural structures and expanded their international perspectives.

The proximity of a Nepal Nursery to a dangerous slope prompted NTUST to cooperate with local partners to undertake slop rehabilitation measures.

11

SUSTAINABLE CITIES AND COMMUNITIES

Unveiling Local Stories:
Student Video Projects in Remote Areas

1.Presenting local workers in a printing shop
2.Interview with the principal of the Miguo Primary school
3.Interview with a woman who specializes in indigenous textile work

Professor Cathy Weng, from the Graduate Institute of Digital Learning and Education, employs the strategy of interdisciplinary collaboration clusters within her projects to cultivate an enriching learning context and environment. This approach serves to elevate students' motivation and broaden their perspectives, nurturing the development of independent thinking and effective teamwork skills.

In this dynamic setting, students proactively engage in the construction of knowledge, channeling their efforts toward the practical application of insights to bring their concepts and concerns to life. Since 2019, over 150 students and instructors from 3 to 4 different disciplines have delved into field observations in remote areas in Taiwan. To date, this initiative has engaged more than 600 participants, directing attention to various social issues.

By introducing educational resources, conducting interviews, and producing over 50 story videos, the program aims to preserve local culture, capturing architectural uniqueness, indigenous culture, and history. These videos were uploaded to Youtube to enhance their dissemination. Sharing poignant local stories from different perspectives, they will help to preserve cultural local reservation and promote tourism.

Resource Recycling and Waste Reduction

Several units within NTUST are actively engaged in waste reduction initiatives. Since 2017, the General Affairs Office has been implementing a comprehensive waste management strategy, resulting in a 47% reduction of monthly waste collection (a decrease from 70 tons to 37 tons). Our cafeterias provide stainless steel utensils for dine-in customers and are actively encouraging the phasing out of single-use tableware. In a bid to enhance environmental awareness, the Environmental Safety Office organized a recycling slogan competition.

Total waste (ton/month) / Resource recycling rate (%)

	2019 (Sept - Dec)	2020	2021	2022	2023
Total waste	35.2	30.8	31.5	31.6	38.5
Recycling rate	38	36.1	26.5	36.2	30.5
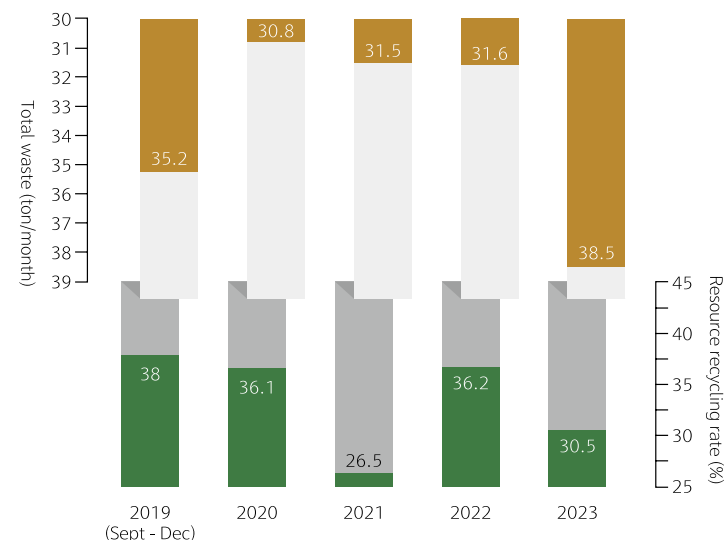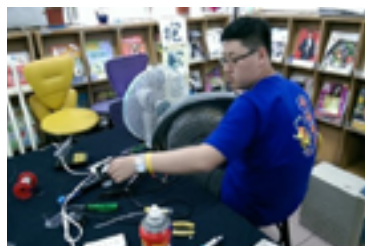
Additionally, the office is driving the disposal or transfer of unused chemicals in laboratories through sharing of waste disposal costs, aiming to target waste reduction at its source. The Student Affairs Office organizes lost and found charity sales and the exchange of new and used student life items, and the library established a second-hand book trading platform. Several student clubs are dedicated to repairing and reusing small appliances in order to extend the lifecycles of products. Our university has been honored with the "College Recycling Program Evaluation" by the Taipei City Government distinction for five consecutive years.

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2. 3.

1. Waste separation site on NTUST campus
2. Promotional Materials for Electronic Waste Recycling
3. Student Clubs on Electrical Appliances Repair

Reduced Consumption of Disposable Tableware and Packaged Drinking Water

In line with the government's plastic reduction policy, our school has been promoting the use of eco-friendly measures since 2023 in meetings, training sessions, and events at all levels. Disposable tableware is not used, and instead, eco-friendly lunch boxes or meal vouchers are provided as alternatives.

According to the statistics for 2023, a total of 296 meetings, activities, and training sessions were conducted, resulting in a reduction of 13,323 instances of packaged water/paper cups. Additionally, 764 eco-friendly lunch boxes were used as substitutes, and 3,691 takeaway meals were served without plastic packaging.

Meal vouchers with denominations of NT$80, NT$100, and NT$120.

Responsible Consumption and Production
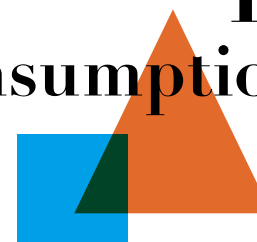
Leaf Composting and Environmental Education

On-campus leaf composting bins

In addition to waste separation and recycling, NTUST is addressing the issue of organic waste from fallen leaves on campus trees. In 2019, we established a designated area for leaf composting, which has significantly contributed to the reduction of organic waste across the campus. Our approach involves the collection of fallen leaves into specially designated compost bins. By introducing composting microbes, we initiate a natural fermentation and decomposition process which leads to the creation of nutrient-rich humus. This practice embodies the principle of 'taking from nature, using for nature,' demonstrating our dedication to sustainable practices. We also placed educational and informative signage on these compost bins. Through these ongoing efforts, we strive to realize a truly sustainable campus environment and promote environmental education.

Responsible Consumption and Production

Green Procurement

NTUST staff attending Green Procurement training courses

For many years, NTUST has been aligning with government directives to advance green procurement and energy conservation measures. In the bidding documents for engineering and service procurement, we encourage vendors to prioritize environmentally-friendly products, thereby extending the principles of green consumption to private enterprises and groups. We promote eco-friendly practices in our offices, encouraging our staff and faculty to favor video conferencing over physical meetings, shift to electronic files instead of paper documents, and adjust air conditioning settings. We replaced outdated equipment by energy-efficient water-saving alternatives, installed solar panels, and promoted resource recycling and campus greening initiatives. We also encourage staff and faculty to choose public transportation or carpooling for work-related travel. Furthermore, we organize environmental education campaigns to advocate for green travel and green products. For six consecutive years (2017 – 2022), we have achieved an outstanding performance in the "Green Procurement Performance Evaluation" by the Ministry of Environment.

Item	2019	2020	2021	2022	2023
Green procurement (specified project procurement rate)	99% Assessment results : **Excellent**	100% Assessment results : **Excellent**	100% Assessment results : **Excellent**	96.75% Assessment results : **Excellent**	99.71% Assessment results: Not yet announced

RESPONSIBLE CONSUMPTION AND PRODUCTION
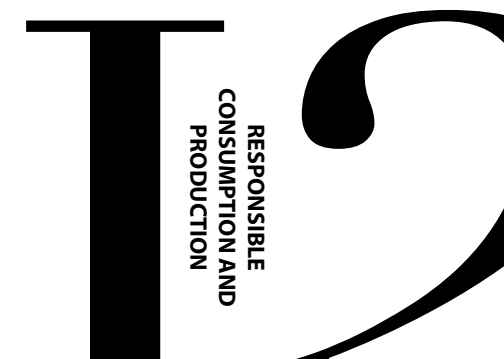
University Disaster Prevention Drills and Strategies

1. 2.

3.

1.Fire Prevention Promotion
2.Teaching the use of fire extinguishers
3.Fire prevention training course

NTUST has established a comprehensive disaster prevention system, conducting thorough hazard assessments of areas, facilities, laboratory equipment, and other structures that may pose risks. Any identified hazards are promptly addressed to minimize potential harm in the event of a disaster.

On the annual National Disaster Prevention Day (21 September), students participate in disaster evacuation drills conducted during regular class hours. Dormitory residents are involved in disaster preparedness exercises which include a range of essential skills, such as evacuation protocols, the correct use of fire extinguishers, first aid techniques, and evacuation practices from high-rise buildings using specially designed escape bags. Annually, a comprehensive emergency response drill is carried out within the laboratories. In 2020, fire safety managers were designated for each building. These managers organize biannual training sessions for self-defense and firefighting, bolstering fire management protocols across all structures.

This approach greatly contributes to elevating the overall safety of the campus environment.

Smart and Green Building Certification

NTUST requires that all newly constructed campus buildings must adhere to the criteria for smart and green building design issued by the Taiwan Architecture & Green Building Centre.   The First Student Dormitory, completed in 2020, has achieved the Smart Building Qualified Level and secured the highest-level certification in Green Building Design. The dormitory's innovative design features an "Π"-shaped exterior that fosters a breezeway space, enhancing air circulation. Additionally, its wave-like balconies offer shade and rain protection, resulting in energy savings exceeding 30%. The installation of an air conditioning heat pump recovery system not only cools public areas but also harnesses waste heat from the air conditioning system to preheat the building's hot water supply, achieving energy savings of 20%. The rooftop integrates solar photovoltaic panels and green roofing for a dual-energy-efficient design. This approach improves roof insulation and waterproofing while creating green spaces, reducing indoor rooftop temperatures by approximately 2.5°C.

The Yiyang Building, completed in 2020, accommodates administrative units and faculty research offices. It is currently undergoing evaluation for Copper-level certification in Smart Building Design, and is a contender for Silver-level Green Building certification.
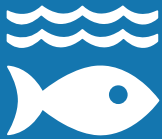

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1.The First Student Dormitory received Smart and Green Building Certification.
2.The Yiyang Building is undergoing evaluation for Smart and Green Building
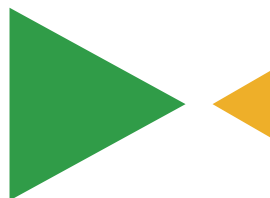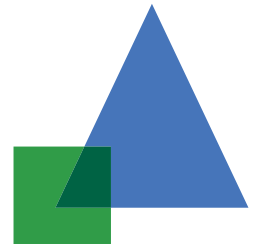
Recycling Waste Shells for Concrete Bricks

The collaboration between Institut Teknologi Sepuluh Nopember (ITS) in Surabaya, Indonesia, and the NTUST USR Engineer in Action Team has continued for six consecutive years. The partnership aims to leverage students' diverse expertise for practical projects that improve the quality of life in disadvantaged communities.

The Bulak community in Surabaya is a fishing village where the majority of residents depend on fishing for their livelihoods.

Habitually, locals would discard waste shells into the sea or onto the beaches, as they are not regarded as refuse. As time passed, the discarded shells slowly submerged the beaches and adjacent land, resulting in substantial harm to the local environment and landscape.

In 2021, the USR Engineers in Action team proposed utilizing these shells as a primary raw material for brick production to reduce the volume of discarded. By substituting forty percent of the crushed stone typically used in concrete bricks with crushed shell fragments, the amount of discarded shells could be significantly reduced. Additionally, given that nearly half of the raw materials were replaced with the cost-free shells, the production cost of the bricks was notably reduced. Seven days after completing the shell brick production, pressure tests were conducted to gather data for evaluating the strength and durability of these innovative bricks.

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1. Using recycled waste shells to make concrete bricks
2. Stress tests are carried out on concrete blocks made from recycled waste shells

Sustainable Oceans
and Conservation Beach Cleaning

Several NTUST student clubs are dedicated to safeguarding the ecological environment. Beach cleaning and other environmental protection activities are organized throughout the year in the Greater Taipei Area, often in collaboration with student clubs from other universities.

The Life Education Club organized a joint beach cleaning event with Taipei Medical University and National Taiwan University in March 2021, at Nanya Rock shore on the Northeast Coast. The Chongde Volunteer Club conducted a beach cleaning activity at Chaojing Coastal Park in Keelung in November 2021, and an environmental protection bike ride along the riverbank at Taipei Expo Park in October 2021. In January and March 2022, the Ciqing Student Club organized beach cleaning events at the Sandun Beach in Tamsui together with students from National Taiwan Normal University, National Taipei University of Education, and National Taipei University of Technology.

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1.Beach cleaning activity by students from Taipei Medical University, National Taiwan University, and NTUST at Nanya Rock Shore
2.Beach cleaning activity at the Chaojing Coastal Park, Keelung
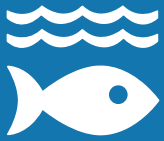
A Lecture on the 'Blue Tears' — Phenomenon Around Matsu Island

"When we first witnessed the blue tears, my wife was found them incredibly romantic, as if we had entered a dreamy azure realm. In contrast, my own emotions resembled a descent into a shadowy underworld," shared Professor Chiang Kuo-Ping from National Ocean University, reflecting on his initial encounter with the "blue tears" phenomenon that ultimately inspired his research pursuits. In March 2022, the NTUST Center for General Education invited Professor Chiang to deliver a lecture on his research, shedding light on the 'blue tears' phenomenon and the underlying principles of bioluminescence. The "blue tears" occur sporadically in the waters surrounding Matsu Island, typically between March and July,

transforming the sea into a mesmerizing canvas radiating a blue glow. Professor Jiang's research team found that this phenomenon is caused by bioluminescent organisms, resembling fireflies. When the water temperature reaches a specific threshold and the fireflies sense an abundance of food, they abruptly emerge in large numbers. This causes the occurrence of red tide during daylight hours and the 'blue tears' phenomenon at night.

Professor Chiang's team has also managed to artificially cultivate these fireflies, allowing people to witness the spectacle of blue tears throughout the entire year. Through their research, they have not only boosted tourism around Matsu Island, but have also contributed to local culture and industry, exemplifying the university's commitment to social responsibility. This initiative can serve as a model for NTUST students to learn from and replicate"

Group photo after the lecture on 24 March 2022

Building an Ecological Campus in Dong Ao Primary School

Dong'ao, situated in Nan'ao Township, Yilan County, is an aboriginal community renowned for its Dong'ao Cold Springs, drawing both tourists and locals year-round. In 2020, an NTUST Engineers in Action team began to engage with the Dong'ao community, embarking on a project focused on optimizing water resource utilization. Following numerous interviews and on-site assessments, the team determined that despite the area's abundant water resources, they remained underutilized.

The members of the NTUST Engineers in Action team were from different engineering disciplines, including construction, materials, chemical, and mechanical engineering. Students and faculty from Minghsin University of Science and Technology also joined the project. Together, they constructed a cold spring water diversion system on campus. After water quality testing and purification, the water was directed to Dong'ao Elementary School

to establish an ecological pond area. This area serves as an ecological educational space and a living environment for the Dong'ao aboriginal community. The project was carried out in two steps: 1. Water Diversion Facilities: A water diversion system from the Dongao Cold Springs to Dong'ao Elementary School was established. Two separate water towers with a capacity of five metric tons each were installed within Dong'ao Elementary School premises. This ensures a stable water source for the ecological channel and addresses the issue of insufficient water resources at Dong'ao Elementary School.2. Ecological Channel: An ecological channel was constructed within the school premises, allowing students at the elementary school to gain a deeper understanding of ecological diversity.

In summary, this project successfully implemented the utilization of resources, connected with the daily lives of the residents, and had significant educational significance.

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1.Building an ecological channel in Dong Ao Primary School, East Yilan
2.Children of Dong Ao Primary School learn about ecology through the ecological channel

Creating "Reduce Plastic Maker Toys"

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1.School kids and senior citizens working together to create animated story material
2&3.Participants use Scratch programming to make digital games and eco-friendly toys.

Professor Gloria Kao, an expert in Digital Learning Technology and Creativity Research at the NTUST Teacher Education Centre, organized intergenerational learning activities at Jingxing Elementary School in Taipei City. Collaborating with Taipei City Wenshan Community College and neighboring communities, she involved her graduate and undergraduate students in guiding elementary school students and community elders in discovering environmental conservation and crafting "Reduce Plastic Maker Toys" The students had received training in utilizing custom teaching materials to convey environmental concepts, address current global environmental issues, and align with the United Nations' environmental protection and sustainable development goals.

They instructed both school kids and the elderly in Scratch programming to craft digital games and create eco-friendly maker toys. Ice-breaking games were used elementary school ggames between school kids and their senior counterparts, and competitive mini-games further nurtured a sense of cohesion and common purpose among elementary school students and senior citizens within the same group. This project successfully accomplished one of its key objectives: "fun in learning and learning through fun". In their feedback, both the schoolchildren and the elderly expressed that the toy-making activity not only brought them the joy of learning but also enhanced mutual communication and strengthened intergenerational bonds through assistance and cooperation.

Transparent University Management

The establishment and operation of the university's decision-making framework are firmly rooted in compliance with the University Act and NTUST's organizational regulations, aligning with our strategic vision for university development. Employing a flexible approach to administrative management, we allocate our internal human and material resources, diligently implementing a diverse array of development initiatives, all with the overarching goal of achieving excellence and fostering sustainable growth.

Regarding our overarching operational strategy and organizational functionality, our primary decision-making bodies encompass the University Council, the University Development Committee, and the Administrative Council. Furthermore, for the efficient execution of specific tasks, the President assembles a dedicated team comprising Vice Presidents, the

Chief Secretary, the Academic Affairs Office, the Student Affairs Office, the General Affairs Office, the Research and Development Office, the International Affairs Office, the Industry-Academia Operations Office, the Human Resources Office, the Accounting Office, and the Deans of our colleges, forming the University Affairs Strategy Promotion Committee. This committee actively

seeks input and recommendations from domestic and international experts, scholars, and industry leaders, engaging in constructive discourse to influence our university's development. It also maintains an ongoing review process of our execution outcomes, making necessary adjustments and refinements to our performance indicators and strategic directions.

Item		2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year
University Affairs Meeting	Participants	68	66	67	68
	Sessions	4	2	3	4
Administrative Affairs Meeting	Participants	51	50	50	55
	Sessions	11	11	11	11
Academic Affairs Meeting	Participants	47	46	46	45
	Sessions	4	4	4	4
Student Affairs Meeting	Participants	42	42	43	43
	Sessions	3	3	2	2
General Affairs Meeting	Participants	24	22	24	23
	sessions	2	2	2	2
University Level Review Committee	Participants	32	31	31	24
	Sessions	10	11	12	9

Transparent University Management

Other Committees	2019 Academic year	2020 Academic year	2021 Academic year	2022 Academic year
Student counseling committee — Participants / Sessions	13 / 2	14 / 2	14 / 2	14 / 2
University Affairs Strategy Promotion Committee — Participants / Sessions	17 / 9	17 / 12	18 / 12	20 / 11
Intellectual Property Promotion Committee — Participants / Sessions	11 / 2	6 / 1	12 / 2	10 / 1
Personal Data Protection Committee — Participants / Sessions	9 / 2	8 / 2	7 / 2	7 / 2
University Affairs Development Committee — Participants / Sessions	23 / 2	23 / 3	21 / 3	21 / 5
University Fund Management Committee — Participants / Sessions	11 / 2	11 / 3	11 / 4	12 / 5

Protecting the Right to Use Information, Safeguarding Basic Freedoms

In the rapidly advancing world of information technology, the ability to freely connect to the internet and use legal software is a fundamental right for every internet user. The NTUST Computer Center provides stable and fast wired and wireless networks to all faculty and students, while upholding principles of information security and fair usage. Thus, the Centre formulated comprehensive guidelines for campus network usage, such as "NTUST Campus Network Traffic Management Regulations", "NTUST Student Dormitory Network Usage Management Regulations," and "NTUST Academic Network Usage Guidelines."

To address threats to information security, such as computer viruses, trojan programs, phishing emails, and hacking, the Centre issues campus bulletins and mass emails to alert staff and students about information security issues. Additionally, it offers cybersecurity-related courses to raise awareness, and has developed numerous information security checklists for self-assessment of compliance with information

Information security site page

security laws and related regulations. Measures such as the implementation of intrusion defense systems, limiting external IP connections to internal IPs, and encouraging the use of VPN connections have effectively enhanced security levels, ensuring the carefree and efficient use of the internet within the framework of a fair and regulated system.

6

PEACE, JUSTICE AND STRONG INSTITUTIONS

Taiwan-Paraguay Polytechnic University: Striving to Become the Premier Technological Institution in Latin America


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1.UPTP students visiting companies in Taiwan
2.In October 2021, NTUST signed a memorandum of cooperation with China Engineering Consultants, Inc.
3.Welcoming event for UPTP students, attended by officials of the Ministry of Foreign Affairs and the Embassy of Paraguay in Taiwan
4.UPTP students receive T-shirts at the welcoming event

In July 2017, Paraguay and Taiwan embarked on an ambitious joint higher education initiative: the "Taiwan-Paraguay Polytechnic University (UPTP)" which envisions to become "the foremost technological university in Latin America." This collaborative endeavor aims to provide enhanced educational opportunities for Paraguayan students, strengthen cultural and educational ties between the two nations, and showcase the technological education excellence of our university. Drawing upon NTUST's educational expertise, UPTP was founded with four departments - construction engineering, mechanical engineering, information engineering, and industrial engineering - all offering instruction in English. Since 2019, UPTP has been enrolling approximately 100 students annually.After nearly five years of continuous communication and coordination, UPTP has successfully established a campus in Asuncion. NTUST has contributed by designing curricula, establishing laboratory facilities, conducting entrance examinations, and sending NTUST's "flying faculty" to Paraguay. During their third year of studies, all UPTP students receive scholarships to study at NTUST for three semesters.The transnational education project has garnered wide recognition. Representatives from the Massachusetts Institute of Technology (MIT) in the Latin American region highly praised UPTP's achievements. The year 2022 marked a significant milestone, with over 400 students applying for admission. The inaugural cohort of students is poised to graduate by the end of 2022, and the second group has arrived at NTUST, swiftly integrating into campus life.During their stay at NTUST, UPTP students not only pursue coursework in their respective departments, but also benefit from a recent collaboration between NTUST and the Chinese Consultants Engineering Corporation. This collaboration involves visits to engineering enterprises, participation in training programs, and exposure to lectures delivered by industry experts. This cooperative effort not only elevates students' professional knowledge, but also contributes to the cultivation of multilingual international engineering talents, thereby enhancing the global influence of both countries.We are confident, that upon their return to Paraguay, these students will embark on successful careers, actively contributing to Paraguay's economic development and playing pivotal roles in future collaborations between government, industry, and academia between our two nations.

Together We Build a Friendly Global Village
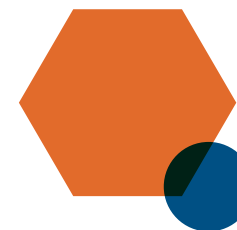
NTUST is deeply committed to international development cooperation and the creation of an excellent learning environment for our students. We forge collaborative partnerships with global institutions, offering our students a diverse cultural learning environment and promoting faculty cooperation and exchange. Through cultural and academic exchanges, we foster mutual economic growth opportunities, creating a win-win scenario for all parties involved. Our university hosts a diverse international community, including 71 foreign faculty members, 1,023 international degree students, 320 Chinese Overseas students, 77 mainland Chinese students, and 194 foreign exchange students from 69 countries. This diversity enriches our campus and promotes cultural integration within an immersive atmosphere.

NTUST, a leading institution in higher technological education in Taiwan, is devoted to the task of nurturing talent to fuel the nation's technological advancement. Over 30 years ago, we embarked on the path of establishing partnerships with high-quality higher education institutions in Southeast Asia and beyond. Through innovative educational methods, cutting-edge research, and collaborations with industry, we produce forward-thinking graduates capable of addressing the challenges and transformations in both society and industry.

In 2017, recognizing the importance of aligning with the global technological landscape, NTUST became a member of the World Technology Universities Network (WTUN), initiated by the University of Bradford in the United Kingdom in 2016. Together with scholars from the UK, Finland, Germany, Austria, Canada, Australia, India, Brazil, Japan, Malaysia, and other countries, we have engaged in international conferences, collaborative research, cooperation initiatives, student exchanges, competitions, and more. We have collectively explored potential solutions to significant global issues, challenges, and problems, utilizing our educational and research accomplishments to fulfill the social responsibilities of global citizens and educational institutions.

In 2021, during the annual meeting of the WTUN Alliance, our Engineers in Action student team shared their experiences, highlighting their project's impact in remote Indonesian communities, where they contributed to improving basic infrastructure, wastewater treatment, and rural education. This allowed participants from universities worldwide to witness the soft skills and contributions of our students to the international community.

Our university has also established international alumni associations, both in Taiwan and in

【 WTUN Taiwan Annual Conference 】

various countries, fostering connections among foreign alumni and aiming to create a boundary-less, employment-friendly environment through the sharing of resources and transfer of experiences. We aspire to leverage our university's global influence and enhance mutual support among our institutions on the international stage.

PARTNERSHIPS FOR
THE GOALS

Stakeholder Assessment Results

Project Title : **Engineers in Action !**

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Students	The students are the most important stakeholders in this project,and efforts are made to ensure comprehensive,fair,and high-quality education in its execution.	Scholarships and related subsidies/grants	School governance	Orientation、Interview	Provide relevant subsidies and daily travel expenses to students involved in international practice.
		Course enrollment and credit issues	School governance	Interview	1.Participants in international volunteering must complete a 2-credit 'International Volunteers for Learning and Practices' course. 2.Students participating in local practice can apply for 1 credit from the General Education Center's Social Practice Course.
		Curriculum planning and course design	School governance	Interview	Design the curriculum for the sustainable environment and energy course with a project-based learning approach and intensive practical exercises.
		Professional competency and skill acquisition	Talent cultivation	Interview	1.Students participating in the project will acquire knowledge and skills related to environmental sustainability. Through domestic and international field practices, they will cultivate international talents in the engineering field with humanistic qualities and social concerns. 2.Students participating in the project will engage in project and problem-based learning to understand local field issues. They will attempt to apply their knowledge to solve projects and demonstrate problem-solving abilities."
		Teacher mentoring and support	Talent cultivation	Interview	Designated supervising instructors provide guidance and lead students in domestic and international field practices.
		The awareness and identification of local issues	Local needs	Interview	Prior to engaging in field practices,relevant training workshops and courses are arranged to assist participating students in understanding local environmental needs and issues,thereby fostering a sense of local identity among the students.
		The learning opportunities of international exchange	International connections	Interview	Collaborating with Indonesia, Vietnam, and Japan to organize international volunteer teams to assist in sustainable development in rural communities. Through international practices, students will collaborate with international students to establish partnerships between local and international students.
		International Mobility Talent Development	International connections	Workshop、Visits and exchanges	1.Organize environmental sustainability promotion education activities or related training. 2.Conduct pre-departure training activities for students going abroad.
Community residents	Through collaboration with international partners and local communities, the project focuses on two main axes: "Clean Drinking Water and Hygiene" and "Disaster Prevention". Participating international student-teacher teams engage in practical improvements of community infrastructure, aiming to achieve long-term sustainability for the community.	Environmental and disaster safety needs	Local needs	Meeting、Workshop、Project outcomes	The automated monitoring equipment for Tayal traditional houses at Dong'ao Elementary School in Dongyue Tribe.
		Environmental hygiene and environmental education	Local needs	Meeting、Workshop	1.Organize appliance repair workshops to assist local residents in resource recycling. 2.Host environmental education workshops to enhance local residents' sustainability concepts.
		Local clean water demand	Local needs	Workshop、Project outcomes	Assist in the installation of water filtration and collection systems for local residents to improve local water resource issues
		Local sustainable energy demand	Local needs	Meeting、Workshop、Project outcomes	1.Design micro-hydro power facilities integrated with traditional house electricity usage. 2.Implement solar-powered pumps for aquaponic systems to improve energy needs.
Public sector	Throughout the execution of this project, the public sector plays a crucial role in providing guidance and advice, while also serving as a driving force in directing the policy initiatives between schools and local communities.	Sustainable education in rural communitiess	Local needs	Meeting、Workshop	Yilan Dong'ao Elementary School's talent development in sustainable education for indigenous communities.

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Faculty and Staff	The greatest driving force for the progress and improvement of this project, the proposed plans and suggestions, serve as significant catalysts for enhancement.	Project execution progress and budget utilization	School governance	Faculty meeting Interview	1.Assist in understanding the progress of project team execution and the utilization of funds through coordination meetings. 2.Explanation of subsidies for teachers implementing the USR project by the school.
		Curriculum planning and design	School governance	Meeting	For participants in international practice projects, a 2-credit course titled "International Volunteers for Learning and Practices" is offered, using a teaching model that combines Problem-Based Learning (PBL) and English-Medium Instruction (EMI) for professional subjects.
		Plan for Sustainable Project Operation	School governance	Meeting	In the future, collaboration with alumni-owned enterprises of NTUST will serve as the backbone for he sustainable operation of future projects.
		Students' employment competitiveness	Talent cultivation	Interview	Through planning field practices, students will be trained in soft skills such as teamwork, communication, and coordination.
		Recruitment and Training of Faculty and Staff	Talent cultivation	Briefing meeting、Meeting、Workshop	Conduct recruitment briefings, training workshops, coordination meetings, and assist newly participating faculty and staff in engaging in practical activities and team assignments.
		Management of local venue issues	Local needs	Public conference、Workshop、Interview	1.Hold regular meetings to negotiate and discuss project execution goals with local partners. 2. Organize sustainability workshops at DongAo Elementary School in Yilan to carry out local activities.
		The closeness of local cooperation	Local needs	Meeting	Signed Memorandum of Understanding (MOU) cooperation intention agreements with local authorities. Currently, a total of five local units have been signed, including Dong'ao Elementary School in Yilan, as well as relevant local institutions around the South Gongguan Settlement in Taipei.
		International Mobility Talent Development	International connections	Workshop、Visits and exchanges	1.Organize cross-border capacity-building conferences and participate in international volunteer site surveys and activities in Indonesia and Vietnam 2.Host international capacity-building workshops and invite partner universities from Japan, Indonesia, and Vietnam to visit and exchange in Taiwan. 3.Visit international partner schools and exchange USR achievements with Universidad Politécnica Taiwán Paraguay."
		Awareness and implementation of international sustainability issues	International connections	Workshop、Visits and exchanges	1.Improve environmental hygiene and community development in rural communities in Madiun, East Java, Indonesia. 2.Improve environmental hygiene and upgrade hardware and software facilities in rural primary schools in Vinh Thanh, suburban areas of Can Tho City, Vietnam. 3.Provide recommendations for disaster resilience and environmental water source conservation in Kawakami Village, Nara, Japan."
		Deepening international partnerships	International connections	Online meeting、Visits and exchanges	The current international partner schools of the project include: Surabaya Institute of Technology in Indonesia, Widya Mandala Catholic University in Indonesia, Can Tho University in Vietnam, and Osaka Institute of Technology in Japan.
NGO/NPO	By establishing international partnership relations, we aim to serve as a communication bridge and resource-sharing platform between the project and international local practice.	International collaborative learning with partners	International connections	Online meeting、Visits and exchanges	1.Organize international online conferences. 2.Arrange sister school visits/exchanges. 3.Send teacher-student teams to conduct field surveys abroad. 4.Conduct international volunteer camp activities.
		International impac assessment	International connections	Public conference、Project outcomes	1.Organize community revitalization Public conference. 2.Complete community resident health surveys. 3.Complete analysis reports on community practice impact assessment questionnaires.

Stakeholder Assessment Results

Project Title : Infinity of the Southern Taipei - Sustainable Co-construction Project of Urban Mountain City and Infinity University

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Students	The students are the most important stakeholders in this project,and efforts are made to ensure comprehensive,fair,and high-quality education in its execution.	Scholarships and related subsidies/grants	School governance	Orientation、Interview	Provide relevant subsidies and daily travel expenses for students involved in international practices.
		Course enrollment and credit issues	School governance	Interview	1.Students participating in local practices are required to take a 3-credit "Engineering Design Course." 2.Students participating in local practices can apply for a 1-credit "Social Practice Course" offered by the General Education Center.
		Curriculum planning and course design	School governance	Interview、Learning feedback	Designing courses with problem-based learning and intensive practical exercises, we aim to develop relevant courses on environmental studies and disaster prevention.
		Professional competency and skill acquisition	Talent cultivation	Interview	Through disaster prevention courses, students acquire certification as disaster prevention officers issued by the Ministry of the Interior. In 2023, a total of 37 students obtained the certification.
		Teacher mentoring and support	Talent cultivation	Interview	The project is divided into 5 groups,each with a dedicated supervising professor to provide guidance and lead students in domestic and international field practices.
		The awareness and identification of local issues	Local needs	Interview	Organize group discussions and field practices for each team, facilitated by professors and teaching assistants. These discussions and field activities will focus on the tasks assigned to each group, allowing participating students to understand local needs and issues, and fostering a sense of local identity among them.
		International learning opportunities	International connections	Project outcomes	1.Explore the mountain city trails and century-old houses in Pisang,Nepal. 2.Gain insights into local construction techniques and differences in building materials in Nepal.
		International Mobility Talent Development	International connections	Workshop、Project outcomes	Collaborate with local residents and engineers to understand Nepalese construction techniques and exchange cultural differences through workshop-based learning.
Community residents	By collaborating with local communities, enhance community disaster resilience and establish the long-term goal of sustainable development for the "Resilient Cultural Urban Communities" initiative.	Local disaster preparedness needs and resilience enhancement	Local needs	Interview、Workshop、Project outcomes	1.Enhance community disaster preparedness systems through the establishment of smart disaster monitoring. 2.Conduct workshops to train local community disaster management personnel and obtain relevant certifications from the Ministry of the Interior. 3.Assist communities in obtaining resilience community accreditation.
		Local Environment and Disaster Education	Local needs	Workshop、Project outcomes	Develop curriculum on environmental disaster preparedness, in collaboration with local junior high schools and elementary schools in Southern Taipei, to establish suitable disaster preparedness courses tailored to the local environment.
		Preservation and Revitalization of Local Historical and Cultural Heritage	Local needs	Meeting、Workshop	Collaborate with public agencies and local cultural associations to develop comprehensive plans for the sustainable management and local development of historical buildings in the vicinity of Southern Taipei.
		Influence of International Field Practice	International connections	Workshop	1.Explore issues faced by rural residents in Nepal to enhance the resilience of living environments, revitalize architecture and cultural characteristics,and ensure the sustainable development of the Pisang Hill City. 2.Establish disaster prevention courses to introduce disaster concepts to children.
Public sector	Throughout the implementation of this project,the public sector plays a crucial role in providing guidance and advice, while also serving as a communication bridge between schools and local residents.	Assistance Commission for Regional Revitalization	Local needs	Meeting、Interview	Commission for the revitalization of historical architectural clusters and surrounding buildings in villages and settlements in the Southern Taipei area.
		Coordination and assistance for local issues	Local needs	Meeting、Interview	Local government units assist our school in establishing cooperative relationships with local residents and entities that have historical relics through participation in local coordination meetings, in order to address site-related issues.

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Faculty and Staff	The greatest driving force for the progress and improvement of this project,the proposed plans and suggestions,serve as significant catalysts for enhancement.	Project execution progress and budget utilization	School governance	Monthly regular meetings	Through monthly regular meetings, assist in understanding the progress of the project team and the utilization of funds.
		Curriculum planning and design	School governance	Interview、survey	1.For participating students,plan relevant practical courses through a Problem-Based Learning (PBL) approach,enabling the application and utilization of learned concepts through field practices. 2.Supplement with 1 credit of social practice from the General Education Center and Southern Taipei Lecture Hall to fulfill the humanistic literacy required for students participating in the project
		Plan for Sustainable Project Operation	School governance	Networking meeting	1.Domestic Field: Collaborate with public sector units to establish district-level cooperation relationships,continuously assisting communities in deepening disaster awareness and response capabilities. 2.International Field:Continuously manage Pisang Hill City in Nepal,supporting the cultural urban development and self-sustainability of the community.
		Students' employment competitiveness	Talent cultivation	Interview、Student learning feedback	Students engage in group-based experiential learning to: 1.Understand urban settlement cultures and their preservation significance. 2.Cultivate abilities in urban community revitalization and fostering community interaction. 3.Develop talents in disaster planning and design through hands-on field operations.
		Management of local venue issuest	Local needs	Meeting、Interview、Workshop	1. Hold regular meetings to discuss with local partners and confirm the direction of project execution. 2. Assist in fostering disaster prevention talents at the local level through the promotion of community disaster preparedness courses.
		The closeness of local cooperation	Local needs	Meeting	Signing MOU cooperation agreements with local units, with a focus on relevant local government agencies,cultural associations,and primary and secondary schools around the Gongguan area in Taipei City.In 2023,a memorandum of cooperation was signed with Wenshan District.
		International Mobility Talent Development	International connections	Workshop、Visits and exchanges	Conducting cross-border workshops and exploring the mountain city trails and century-old houses for maintenance in Pisang,Nepal.
		Awareness and implementation of international sustainability issues	International connections	Workshop、Project outcomes	1.Cross-national exchange of local construction techniques and cultural differences. 2.Collaborating with Nepalese engineers on technical aspects,considering local available materials, traditional bricklaying techniques,and community needs as crucial references for engineering design.
		Deepening international partnerships	International connections	Meeting、Visits and exchanges	1.Current international partner schools in the project: Tribhuvan University in Nepal,Osaka Institute of Technology in Japan, and King Mongkut's University of Technology North Bangkok in Thailand. 2.Collaborating with the National Defense Medical Center on a medical volunteer team exchange trip to Nepal.
NGO/NPO	By establishing international partnership relations, we aim to serve as a communication bridge and resource-sharing platform between the project and international local practice.	International collaborative learning with partners	International connections	Workshop	Collaborate with Kathmandu University in Nepal to conduct workshops on local construction techniques and cultural differences in technology exchange.
		International Practice Support System	International connections	Meeting、Interview	The JuJu MaMa Children's Education and Care Association offers assistance to our school for international practice in Nepal,including support in language,daily life,transportation, and other aspects.

Stakeholder Assessment Results

Project Title : Project LET'S Go!

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Students/ Seed Volunteers	The students are the most important stakeholders in this project,and efforts are made to ensure comprehensive,fair, and high-quality education in its execution.	Scholarships and related subsidies/grants	School governance	Orientation、Interview	Provide relevant subsidies,travel allowances,and daily expenses to students involved in local practical activities.
		Curriculum planning and course design	School governance	Interview Work diary	1.Students participate in relevant social practice courses, and through qualitative questionnaires and learning interviews feedback,students can dynamically adjust the mode of courses and social practice. 2.Participating students enroll in the ""An Introduction to STREAM"" micro-course offered by the General Education Center to establish theoretical foundations."
		Problem-solving, teamwork and communication skills	Talent cultivation	Interview Work diary	Through project team discussions, we delve into the specific needs of practical sites, design unique courses tailored to each site, and conduct regular discussions and follow-ups to assess whether participating students are able to accumulate relevant skills and competitiveness in alignment with society.
		Recruitment and training of student volunteers.	Talent cultivation	Information session Interview Work diary	Recruit college and high school students as volunteers for project site practices,hold relevant orientation sessions and workshops to assist student volunteers in participating in local site practices.
		The awareness and identification of local issues	Local needs	Interview Work diary	By immersing ourselves in and understanding the community, we can design site-specific courses for each location,thereby fostering a sense of local identity among students.
		Opportunities for international exchange and interaction	International connections	Recruitment briefing	Recruit international students from our university through project outcomes to join local site practices together,enhancing opportunities for exchange between domestic and international students.
Community residents and rural elementary and middle school children	Rural children are the second most important stakeholders in this project. By collaborating with local communities and rural elementary and middle schools, the project aims to establish a co-learning system between university students and rural elementary and middle schools, seeking the long-term goal of achieving balanced and diversified development in rural education.	Diverse learning development for rural children	Local needs	Interview	For the needs identified in different sites,the project will conduct brief interviews with community partners after each activity to gather feedback on the effectiveness of implementation.
		Identity learning for children of new immigrants in rural areas	Local needs	Interview	With a focus on multicultural/Southeast Asian culture, we provide a project-based learning environment to enhance the self-expression,logical thinking, and teamwork skills of children of new immigrants and their classmates."
		Utilization of idle space in the practical venue	Local needs	Interview Workshop	Repurposing of the Technology Makerspace Classroom at Towmeng Elementary School in Hualien.
		Rural technology education planning and cultivation	Local needs	Meeting Interview	The project team integrates STEAM into the practical venues, utilizing existing teaching equipment to design exclusive venue-specific courses and cultivate related seed teachers.
Private sector companies	During the execution of this project,the private sector and corporations establish a system of mutual assistance and sharing through partnership, playing a key role in project development and innovation.	Corporate Social Responsibility (CSR) initiatives	Local needs	Meeting Workshop	Inviting joint participation in practical venue activities and courses, along with the planning of relevant teaching materials. Collaborating companies in this project include: ALUXE, Omexey, Ghost Island Media, and Vigor Phoenix Social Enterprise.

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Faculty and Staff	The greatest driving force for the progress and improvement of this project, the proposed plans and suggestions, serve as significant catalysts for enhancement.	Curriculum planning and design	School governance	Meeting	1.Collaborate with the General Education Center to launch micro-programs, establishing theoretical foundations. 2.Extend the General Education Social Practice course as practical venue courses for students.
		Administrative system and support for hardware and software.	School governance	Meeting	1.Establish and activate a new recording studio to provide a dedicated audiovisual recording space for the project, which significantly aids in the collection of multimedia materials for diverse texts and social practices. 2.Elevate the General Education Center to a higher-level teaching unit, fostering closer collaboration between the project team and the General Education Center in social practice initiatives."
		Students' employment competitiveness	Talent cultivation	Interview Tracking survey	1.Through planning field practices, cultivate students' soft skills such as teamwork, communication coordination, and curriculum arrangement. 2.Track the career choices and life development of participating students and learners through quarterly qualitative surveys."
		Management of local venue issues	Local needs	Meeting Interview	1.Regularly hold meetings to negotiate with local partners and discuss project execution goals. 2.Establish a collaborative learning system between university students and rural junior high schools and elementary schools, fostering students' innovation and creativity through the investment and utilization of educational resources."
		The closeness of local cooperation	Local needs	Meeting	We have signed MOUs with local authorities, focusing on the educational management of rural junior high and elementary schools. Additionally, we have collaborated with local charitable and social service organizations.
Public sector	Throughout the execution of this project, the public sector plays a crucial role in providing guidance and advice, while also serving as a driving force in directing the policy initiatives between schools and local communities.	Education development of rural children from new immigrant families	Local needs	Meeting	Provide a project-based learning environment for children of new immigrants to enhance their self-expression, logical thinking, and teamwork skills.
		Diverse development in rural elementary and middle school educationes	Local needs	Meeting	Regularly hold exchange meetings with relevant units of the public sector and practical venue primary and secondary schools to understand their needs and implement them.
NGO/NPO	Establishing strategic partnerships as bridges for communication between the project and local communities, and as platforms for resource sharing.	Assistance in addressing local issues	Local needs	Meeting	Collaborate with the "Taipei New East Rotary Club" to address the utilization of idle educational space at Towmeng Elementary School in Hualien through field practice planning.
		Opportunities for international interaction and exchange	International connections	Recruitment briefing	Collaborating with "Project LET'S Go!" to recruit international university students as field practice volunteers.

Stakeholder Assessment Results

Project Title : Creative Aging — Cocreation and Collaborative Learning

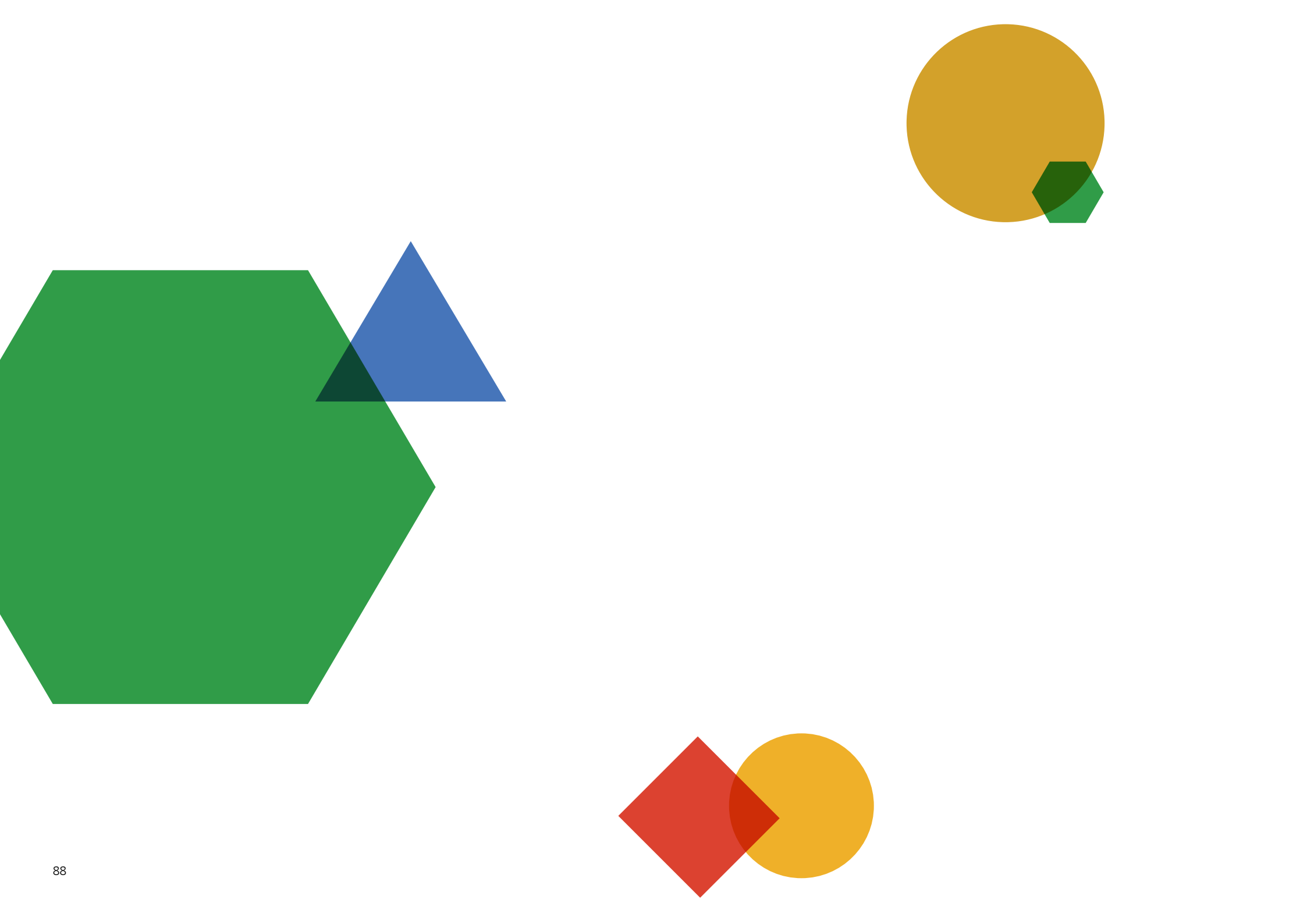| Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Students	The students are the most important stakeholders in this project, and efforts are made to ensure comprehensive,fair, and high-quality education in its execution.	Scholarships and related subsidies/grants	School governance	Orientation、Interview	Provide funding for the development of devices related to aging issues to students engaged in community practice.
		Curriculum planning and course design	School governance	Interview	Design specialized courses, workshops, and micro-credit courses to train students in the knowledge and skills required to enter the field, collectively explore the current situation of the field and define core issues, and propose solutions and prototype implementations.
		Professional competency and skill acquisition	Talent cultivation	Interview	1.Participating students in the project can acquire knowledge in the fields of design and biomedical engineering and apply their learning in real-world settings to understand how to implement practices in community settings. 2.Students developed an elderly tabletop game and received the Mingmen Award for Creative Design in the 2023 Toy and Infant Products Creative Design Competition.
		Teacher mentoring and support	Talent cultivation	Interview	Designated supervising instructors provide guidance and lead students in domestic and international field practices.
		The awareness and recognition of issues affecting the elderly	Local needs	Interview、Visits and exchanges	1.Organize community site visits, sharing sessions, and training courses on relevant elderly issues to assist participating students in understanding the needs of the elderly population and to emphasize the importance of understanding topics such as elderly care,interaction,and social welfare. 2.Conduct interdisciplinary workshops on creative aging,training students in design thinking and service design abilities to collaborate across disciplines and propose innovative designs and solutions.
		Health promotion and development	Local needs	Survey	1.Organize health promotion activities for the elderly, including seminars and health measurements, to enhance their awareness of personal health. 2.Collaborate with the Health Services Division of Taiwan Tech to conduct smoking cessation classes for students,assessing the cardiovascular risks of smoking and evaluating smoking cessation methods.
Community residents Elderly population	The elderly population is the second most important stakeholder in this project. Throughcollaboration between university students,local communities,and care institutions,we aim to promote the comprehensive enhancement of elderly health and delay aging. Our goal is to achieve intergenerational co-creation and collaborative learning within this project.	Elderly Health Physical and Mental Assessment	Local needs	Interview、Workshop	1.Provide elderly health measurement services at community centers to assess vascular,mental health, and muscle deficiency risks. 2.Focus on the concept of creative aging and design teaching materials to reduce the barrier for seniors in the community to engage in artistic creation.This helps seniors express themselves through art,boost their confidence,and tap into their creative potential.
		Elderly Field Volunteer Training	Local needs	Recruitment briefing、Workshop	Recruit senior community members as elderly volunteers and provide pre-training mechanisms to assist in field course services. Train elder instructors to lead creative aging course activities.
		Elderly Field Planning Services	Local needs	Meeting、Survey	1.Collaborate with community venues to plan relevant elderly workshops and creative courses. 2.Develop curriculum for related design and art creation courses,and pilot them in community settings.
		Deepening the Impact on Local Communities	Local needs	Survey	In addition to focusing on the physical and mental health of the elderly, expand health promotion seminars and activities to other demographics such as young adults and women.

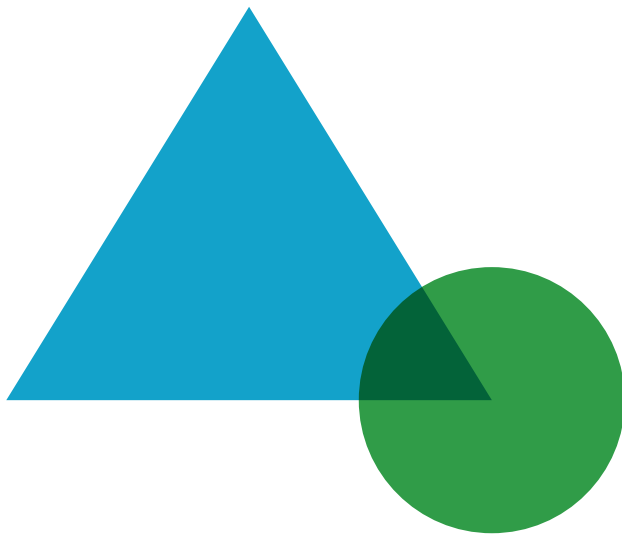| Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Faculty and Staff	The greatest driving force for the progress and improvement of this project, the proposed plans and suggestions,serve as significant catalysts for enhancement.	Project execution progress and budget utilization	School governance	Faculty meeting Interview	Through coordination meetings,assist in understanding the project team's progress and expenditure status.
		Curriculum planning and design	School governance	Project outcomes	Designing applied courses related to elderly issues, through project design exercises,training students to address user needs and problems,propose solutions,and fully articulate design concepts.
		Recruitment and training of faculty and staff	Talent cultivation	Meeting、 Workshop	Conducting orientation sessions and training workshops to enhance the team's in-depth understanding and expertise in elderly issues.
		The understanding of health issues among the elderly population.	Local needs	Meeting、 Interview、 Workshop	Regularly convene meetings to negotiate with local partners and discuss project execution goals.
		Promoting Integration through Joint Learning between Youth and Elderly	Local needs	Workshop	Bring the board game materials produced by the project to the venue for the elderly to playtest. After the experience,allow participants to take turns sharing their thoughts,with the elderly also offering specific suggestions,enabling the project to continuously iterate and improve.
		The closeness of local cooperation	Local needs	Meeting	1.Based on community venues in the Taipei and New Taipei areas, we collaborate with relevant elderly health activity centers and community senior universities to arrange course activities. Currently,we have partnered with 6 venues. 2.To promote the creative courses developed by this project, materials are sent out and online training sessions are conducted,enabling community venues in various locations to independently organize courses. In total,7 sessions have been conducted.
Public sector	During the implementation of this project, public sector/medical units play a key role in providing guidance and advice,while also assisting in the application of the project's research and development outcomes.	Promotion of Elderly Health	Local needs	Meeting、 Interview	Collaborate with "Tamsui District Health Center" to promote community health promotion seminars.
NGO/NPO	Throughout the implementation of this project,partnerships have been established to serve as bridges of communication between the project and the elderly,as well as platforms for resource sharing.	Promotion of Elderly Health	Local needs	Meeting、 Workshop	Collaborate with multiple association organizations to expand the richness of courses,assisting in organizing creative aging courses, conducting related health seminars and measurement workshops,and facilitating various experiential activities.
		Training for Elderly Activity Volunteers	Local needs	Meeting、 Workshop	During the practical field sessions, interested elderly individuals are arranged and trained to serve as teaching assistants,assisting the project in executing relevant activities in the field.
Private sector companies	Throughout the execution of this project, the private sector and businesses have collaborated through partnership relationships to establish a system of mutual assistance and sharing,playing a key role in the development and innovation of the project.	Corporate CSR Service Image	Local needs	Workshop	Collaborate with "LAVA Sports (Taiwan Triathlon)" to develop a monitoring system through the project,assist in measuring athletes' body composition,and provide relevant advisory reports.

Stakeholder Assessment Results

Project Title : I-Villages: Mobility for Change Urban and Rural Collaboration Project

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Students	The students are the most important stakeholders in this project, and efforts are made to ensure comprehensive,fair,and high-quality education in its execution.	Scholarships and related subsidies/grants	School governance	Orientation、Interview	Providing relevant subsidies,daily travel allowances, and model material expenses for students involved in local practices.
		Course enrollment and credit issues	School governance	Interview	Field practice is incorporated into the curriculum, and completion of the entire course ensures compliance with school requirements, leading to corresponding credits or internship hours.
		Curriculum planning and course design	School governance	Interview、Field investigation	Offer relevant courses and conduct on-site field surveys, issue exploration,design planning,and results presentations in group settings,in line with the requirements of social practice course procedures.
		Professional competency and skill acquisition	Talent cultivation	Interview	Students participating in the project can acquire professional skills in digital educational technology and international promotion. Additionally,they can also gain expertise in poster design,video editing,and digital marketing promotion.
		Teacher mentoring and support	Talent cultivation	Interview	Dedicated supervising professors are appointed to provide guidance and lead students in domestic and international field practices.
		The awareness and identification of local issues	Local needs	Interview	Arrange local cultural experience courses to assist participating students in understanding local culture and issues,fostering a sense of local identity among the students.
		Acquisition of Practicum Site Tools	Local needs	Meeting coordination	The practical site surveying tools are difficult to carry,so we negotiated with local schools to cooperate and provide surveying tools.
		International Talent Mobility,International Exchange	International connections	Interview	Through international digital learning partners, both local and international students at our school can utilize digital distance learning platforms to access the abundant teaching resources of National Taiwan University of Science and Technology,facilitating learning and international exchange for students in rural areas in Taiwan and abroad.
Faculty and Staff	The greatest driving force for the progress and improvement of this project,the proposed plans and suggestions,serve as significant catalysts for enhancement.	Project execution progress and budget utilization	School governance	Faculty meeting Interview	Through coordination meetings, assistance is provided to understand the progress of the project team and the utilization of funds.
		Curriculum planning and design	School governance	Interview、Tracking survey	The social practice courses are integrated with specialized practical courses, allowing students to apply and demonstrate what they have learned through field practices.
		Students' employment competitiveness	Talent cultivation	Interview	Through planning field practices, students cultivate soft skills such as teamwork, communication, coordination, budget management,and scheduling.
		Recruitment and Training of Faculty and Staff Members	Talent cultivation	Information session、Workshop	Conduct recruitment briefings and training workshops, and assist new participating teachers in planning and offering relevant professional courses.
		Management of local venue issues	Local needs	Meeting、Interview、Field investigation	1. Hold regular meetings to discuss project execution goals with local partners. 2. Establish disaster-resilient energy storage systems, providing independent hydroelectric systems for civilian use. Incorporate the concepts of sustainability and environmental protection into tribal communities without compromising ecological integrity.
		The closeness of local cooperation	Local needs	Meeting	Signed MOUs with local units, currently totaling 18, including local agricultural associations, indigenous cultural associations in Taitung,local libraries, and rural elementary and junior high schools.
		International Talent Mobility, International Exchange	International connections	Interview	Teachers engage in expanding connections with international schools through international digital partnerships,enhancing practical exchange experiences.

Stakeholders	Significance	Communication topics	Aspect	Communication method	Communication effectiveness
Alumni	Alumni serve as the second pillar of support for this project, providing opportunities for local collaboration and exchange.	Support and Collaboration from Alumni	Local needs	Meeting	The project lacks land surveying instruments that are difficult to carry to practical sites. Alumni sponsorship is sought to provide relevant hardware measuring tools and coordinate practical site-related matters.
Community residents	By collaborating with local communities, this project aims to promote a "rural-urban resource exchange" service support system, seeking the long-term goal of sustainable development in rural settlements.	Local Cultural Tourism Demand	Local needs	Interview、Tracking survey	1.The accessibility facilities planning at the ecological education park is inadequate. Through practical investigation, design proposals are being put forward to improve the planning and implementation of accessibility facilities. 2.Guanshan Water Park, which has been open for 25 years,is facing issues of insufficient visitors and maintenance. A regeneration design proposal is suggested for reference. 3.Creative community activities, manpower support, and assistance in cultural event promotion.
		Local Sustainable Energy Demand	Local needs	Field investigation、Project outcomes	Install solar energy storage systems in rural indigenous communities to provide energy for community use during times of energy shortage caused by natural disasters.
		Improvement of Local Public Infrastructure	Local needs	Interview、Project outcomes	1.Due to the damage caused by the typhoon at Guanshan Water Park,the team proposed a landscape improvement plan for public construction. 2.An effective activation plan for the utilization of idle spaces in local communities, with the project team assisting in space measurement and mapping.
		Training of Local Cultural Instructors	Local needs	Workshop、Project outcomes	During the practical fieldwork, the team arranges for student groups to engage in cultural learning and experiences. Local partners are invited to serve as collaborative instructors,with guidance from team teachers in curriculum planning. This enables students to learn and grow together with community members. A total of 10 training courses were conducted in 2023.
		International Talent Mobility,International Exchange	International connections	Interview	Through international digital partnerships, students from Taiwan, as well as from international and other regions, are brought into a digital distance learning platform to broaden the perspectives of rural children and enhance their global awareness.
Public sector	Throughout the execution of this project, the public sector plays a crucial role in providing guidance and advice, while also serving as a driving force in directing the policy initiatives between schools and local communities.	Assistance Commission for Regional Revitalization	Local needs	Meeting、Interview	Improvement of public environmental safety and promotion of local characteristics in the Guanshan area of Taitung.
		Rural Digital Education in Local Areas	Local needs	Meeting	Digital education assistance and teacher training at all levels in areas including Guanshan in Taitung, Tuku in Yunlin, Jinshan in New Taipei, and the coastal areas of Keelung.
NGO/NPO	Establishing strategic partnerships as bridges for communication between the project and local communities, and as platforms for resource sharing.	Assistance in Addressing Local Issues	Local needs	Meeting	Signing a cooperation MOU with the "Taitung Indigenous Sustainable Development Association" to repurpose local vacant spaces as bases for showcasing and developing indigenous culture in the region.
Private sector companies	During the execution of this project, the private sector and businesses collaborate through partnership relationships, establishing mutual assistance and sharing resources to support the project.	Corporate Social Responsibility (CSR) Image and Services	Local needs	Meeting	YFY PACKAGING INC. provides corrugated paperboard free of charge as material for students' 1:1 construction, serving as a sponsor of this project.