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NATIONAL YANG MING CHIAO TUNG UNIVERSITY

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2021

NATIONAL
YANG MING CHIAO TUNG
UNIVERSITY

Sustainable Development Annual Report

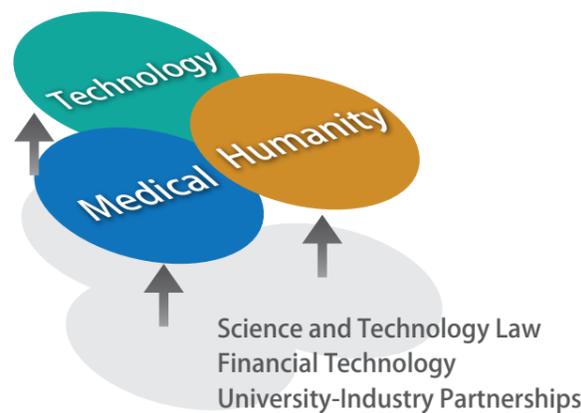


The President | Chi-Hung Lin
National Yang Ming Chiao Tung University

On February 1, 2021, the merged National Yang Ming Chiao Tung University (NYCU) was formally unveiled. In the past, National Yang-Ming University and National Chiao Tung University respectively bore the great responsibilities of ensuring access to health care in remote communities and fostering the development of the semiconductor industry. The merger of the two top universities brings new strengths to medical and electronics research and undoubtedly, we will continue to embrace our responsibility in advancing the transformation of Taiwan's industry. The merger coincided with the plague of a century, COVID-19, which has caused tremendous changes in interpersonal relationships, and has altered the very structure of life, economy, industry, and politics that the world had previously been accustomed to. It's as if we've been shuttled down a long and winding path, yet one at which the end promises to reveal new and striking landscapes.

In these times of great upheaval, and as one of Taiwan's top-tier universities, NYCU is fully shouldering the social responsibility that it carries, while at the same time beginning to rethink the role played by universities. Sustainability issues have become of the utmost importance, and for this reason, the 17 Sustainable Development Goals (SDGs) set forth by the United Nations (UN) in 2015 have been and will continue to be primary development goals for NYCU. This year, NYCU has continued to work diligently towards the realization of all 17 SDGs outlined by the UN. Outstanding results have been seen in academic research, in the cultivation of socially-minded talent, and in direct contributions to society. It is our hope that we can thereby put an end to various inequalities and create a more sustainable environment. Through integration of technology, medicine, and the humanities, advancements can be made in science and technology law, financial technology, and industry-academia collaboration, leading to the fulfillment of our University Social Responsibility (USR).

NYCU believes that while reexamining and redefining the social responsibilities of the university, we can simultaneously instill the sensibilities of the humanities into both medical care and electronics. Doing so can extend the influence of the university to its partners in collaboration, and, in the case of international collaboration, can even bring its research and experience to the world stage, in turn making the world a more beautiful place to be. NYCU is confident it can lay the groundwork for global sustainable development, and deeply believes that if we "ACT TOGETHER, WE GO FAR!"



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01

NO POVERTY

Research

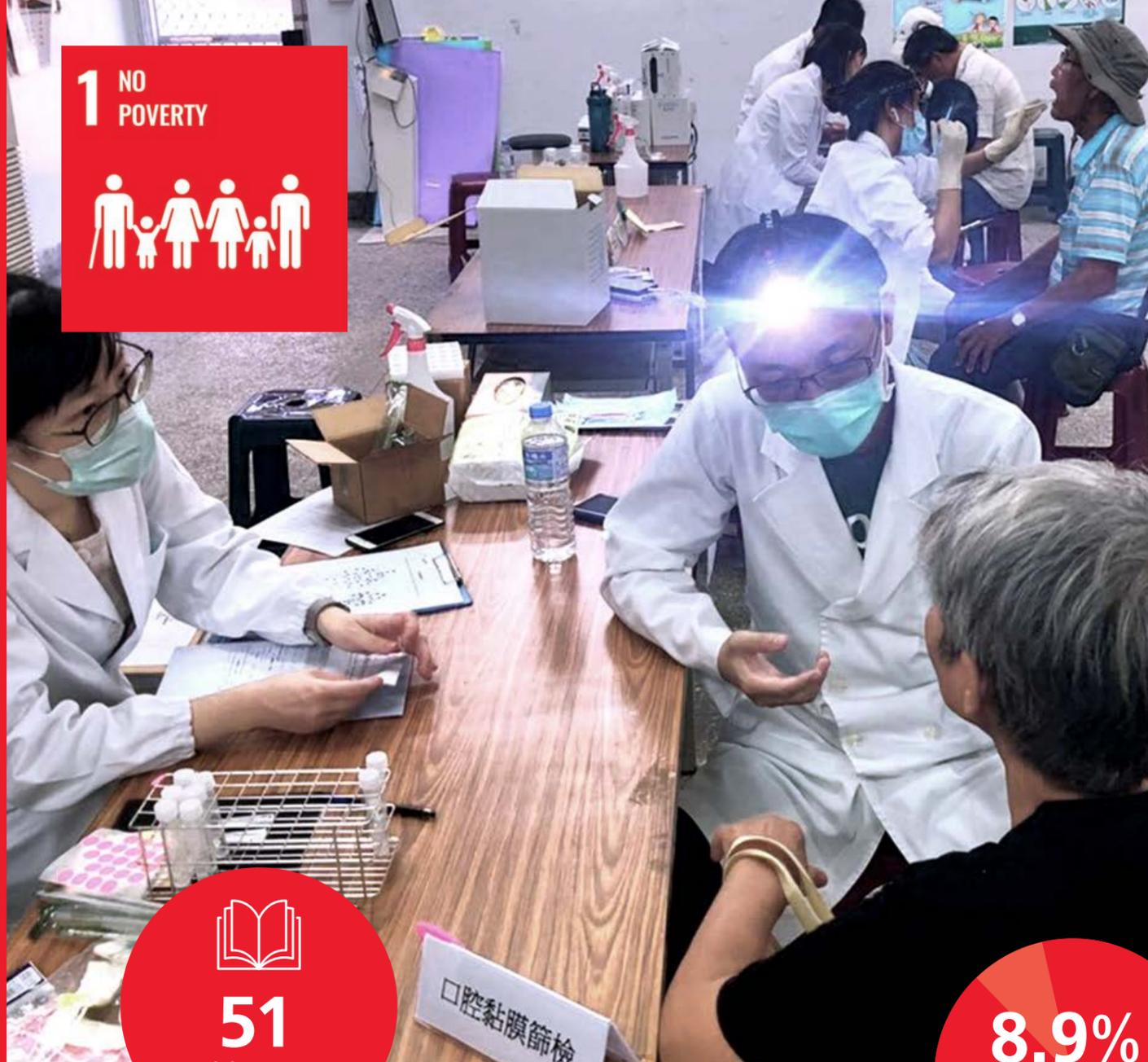
University Social Responsibility Projects

The NYCU Yang-Ming Campus has participated in the University Social Responsibility Projects since 2018. Focusing on promoting physical fitness, care and outreach, improving the environment, and the welfare of senior citizens as its four main directions, NYCU continues to promote five sub-projects, respectively named the "Tribal Star Incubation: Intelligent Health for Remote Areas," "Aging Society Revitalization Action Plan," "Senior Mind Senior Citizen Lectures," "Oral Health Education Promotion for the Elderly," and "Health and Welfare Professional Social Practice Empowerment Base." While implementing these projects, NYCU found that senior citizens in certain regions have trouble affording the necessary costs of long-term care resources. Therefore, NYCU redirected its focus to cultivating community businesses run by senior citizens, giving senior citizens a high enough income to pay for long-term care.

AIoT Talent Training Program

Since 2019, the NYCU Chiao-Tung Campus has responded to the government's plan to cultivate talents in the technology sector. Leveraging its advantages in the field of information and electronics technology, the Chiao-Tung Campus collaborated with high-tech manufacturers to establish the "AIoT Talent Training Program," hoping to popularize high-end knowledge. This program not only trains teachers for "technology information education courses" at elementary and junior high schools, but also collaborates with city and county governments. The university gathers resources to teach disadvantaged students the basics of AI/IoT/coding, and hires them as teachers' assistants, while city and county governments subsidize their salaries and provide them with allowances.

1 NO POVERTY



51

Publications in SCOPUS

8.9%

Percentage of All Taiwan Publications



1283

Students who chose the Course Units

Social Impact

Yang-Ming Oral Health Service Team

This year is the 44th anniversary of the "Yang-Ming Oral Health Service Team," which is composed of freshmen to junior students from NYCU's Department of Dentistry, as well as alumni who volunteer for this service. Every summer, the team visits areas lacking oral health resources to provide oral health education, oral mucosa screenings, oral function assessments, and dental health checkups. These services allow local residents and children to receive dental checkups and treatments despite their geographic location and financial situation. The team also advocates tobacco, alcohol, and betel nut prevention, as well as oral cancer screenings, instilling oral health literacy in the community to help them maintain oral health and physical health in general and avoid the financial burden of medical costs.

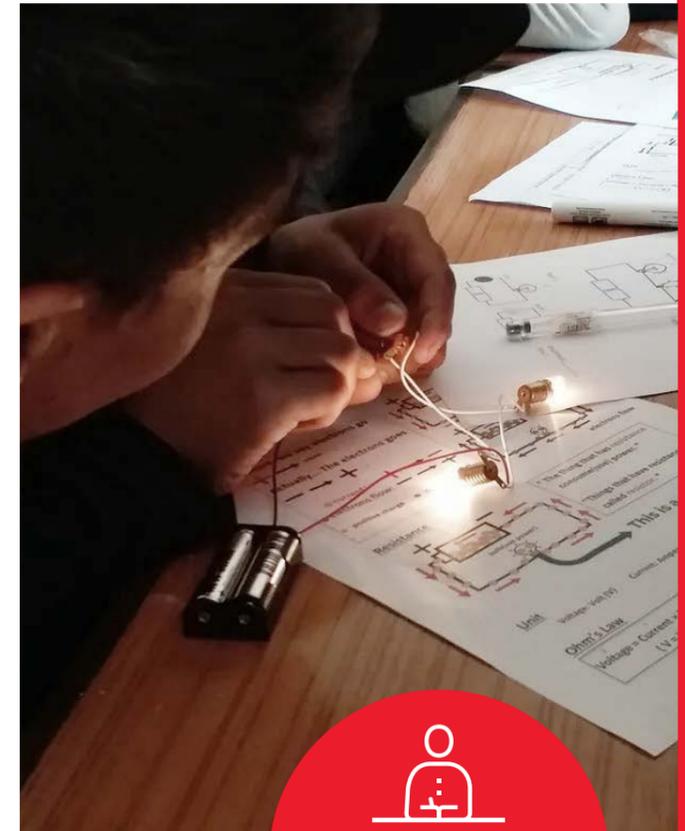
Student Cultivation

Course on No Poverty

With economic development as a starting point, the "Contemporary World" course guides students to explore three major themes: globalization, multinational organizations, and immigrants and migrant workers. The goal of this course is to provide students with an understanding of important issues in contemporary international society, encourage them to care about human life and development, and cultivate in them a broad international perspective, hoping to cultivate caring modern intellectuals with a global vision and encourage students to shoulder their responsibilities as modern global citizens. An average of 350 students have taken the course each year since its inception.

Fighting Poverty with Knowledge in Ladakh, India

NYCU's "Jullay International Volunteer Team" to India has provided volunteer services in India's Ladakh region for 11 years. In addition to designing information technology, science, and English teaching materials for local students, the team has also long collaborated with the "ASUS Foundation," in a long-term partnership, to provide digital resources like refurbished computers. Although volunteers were unable to go to the region in person over the past two years due to the COVID-19 pandemic, they still cared deeply about the education of the children at "Jamyang School." In addition to redirecting their services to remote areas in Taiwan, the team also prepared online learning materials, so that the pandemic did not interrupt the education at "Jamyang School." The team also proactively promotes fundraising campaigns in Taiwan, hoping to do its part in ending poverty in all forms.



22

Course Units

Stewardship

Student Aid Programs

To ensure disadvantaged students are not deprived of learning opportunities due to financial difficulties, NYCU has various financial aid and support measures in place, such as matching students to alumni or corporate financial aid, prioritizing them for work-study opportunities, and ensuring their housing rights. The University also provides healthcare, academic support, international exchange, and career exploration programs to help students overcome any obstacle they may face throughout their time at NYCU. For more details about these programs, please visit the Aid Section of the NYCU website.

Ending Period Poverty and Creating a Period-Friendly Campus

Many people around the world cannot afford the cost of menstrual products, leading to physical and psychological illnesses. The NYCU Student Association launched the "Period Product Sharing Box Program"—its first step towards ending period poverty. Menstrual product sharing boxes will be placed in three student cafeteria restrooms, providing products to those in need.



02

ZERO HUNGER

Research

AIoT+Agriculture

Rice blast is one of the most serious plant diseases. Existing image detection methods for the disease are mostly used after plants are already infected, and it is too late to save. NYCU's team of biotechnology and information engineering experts combined their expertise in biotechnology, IoT, AI, and agriculture to create the AgriTalk Management System. This system uses non-image IoT devices to monitor temperature, humidity, barometric pressure, and other indicators under the RiceTalk agricultural feature project and AI models to provide early predictions of rice blast. This research team also proposed an innovative spore germination mechanism as a new feature extraction model for agriculture. In current experiments, RiceTalk's prediction of rice blast has an 89.4% accuracy rate.

Promote Healthy Eating for the Elderly

Taiwan became an aging society in 1993, and went on to become an aged society (where over 14% of the population is aged 65 years or above) in 2018. It is estimated that Taiwan will become a super-aged society (where over 20% of the population is aged 65 years or above) by 2025. In 2011, NYCU established the Aging and Health Research Center, which conducts research focused on basic biology, clinical medicine, and technological applications. The Center also actively promotes proper and healthy eating habits for the elderly. By teaching older people how to prevent aging, strengthen their muscles, and improve their cognitive skills through the meals they eat every day, the Center helps them lead positive, vibrant lives and avoid dementia and disabilities.

2 ZERO HUNGER



40

Course Units



58

Publications in SCOPUS

5.7%

Percentage of All Taiwan Publications

Social Impact

Campus Market

Over the years, to encourage local farmers to keep cultivating and farming their land, and to provide students and faculty members with a convenient way to buy local produce, the NYCU Chiao-Tung Campus Store and the Student Council invite different local farmers and caterers to set up their stalls on campus, forming a small market that students, faculty members, and local residents greatly look forward to. The market also diversifies the dining options on campus.



Student Cultivation

Healthy Meals and Care for the Underprivileged

NYCU established the Healthy Meals and Care for the Underprivileged course in 2013. Over the years, the course has taught students proper nutrition education. In 2020, the course began collaborating with student clubs to not only make and donate delicious and healthy snacks to the "St. Teresa Children Center," but also to teach the children there how to make their own healthy snacks. Students taking the course also sell healthy meals at the student cafeteria and donate all proceeds to underprivileged groups.

The Self-Cooking Era

NYCU's Yang-Ming and Chiao-Tung Campuses are both located on a hillside. Most students rely on the school cafeteria or the food delivery services that have become popular in recent years for their meals. However, in the event of bad weather or a natural disaster, getting food can become a challenge. Therefore, when building new dormitories, NYCU took students' need to prepare meals for themselves into consideration. For students gradually learning about healthy eating, this is the final step of their food education.

Stewardship

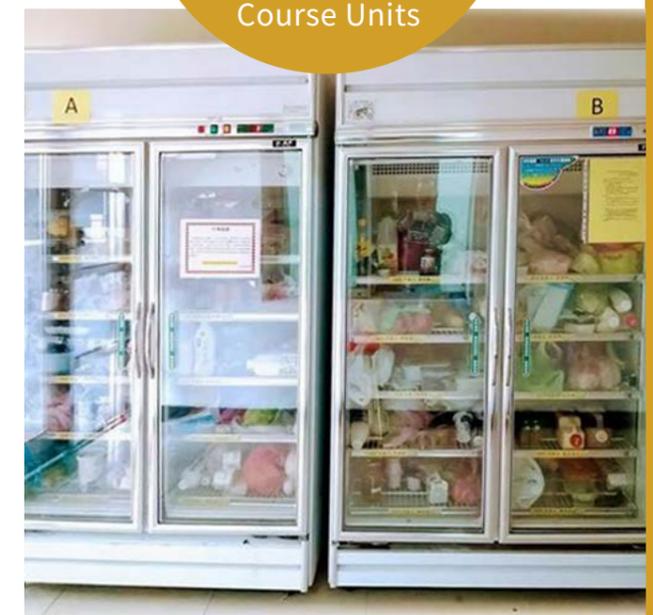
Meal Delivery Services for Elderly People at the National Yang Ming Chiao Tung University Hospital Long-Term Care Center

The National Yang Ming Chiao Tung University Hospital in Yilan has a small, but multi-functional, Long-term Care Center that not only provides elderly people with the necessary care, but also has special equipment and meals that cater to their needs. The Center features adjustable tables and chairs that can be arranged to suit different activities, and meals designed to meet elderly people's nutritional needs. The meals are also designed to have bright colors that stimulate their appetites, as well as special utensils that will make it easier for elderly people to eat on their own. These efforts take care of elderly people's physical and emotional needs, making sure they don't feel uncomfortable about eating due to the limitations of their bodies. In addition to the care center, we also collaborate with institutions of all kinds to ensure that elderly people can receive good care and dining services without having to leave their houses during the pandemic.



765

Students who chose the Course Units



03

GOOD HEALTH AND WELL-BEING

Research

Aging and Health Research Center and Cancer Progression Research Center

NYCU has 23 research centers across hospitals, institutions and homes working together on the hierarchical exploration of life course research, from emergency treatment, disease management, and preventive medicine, as well as the promotion of people's health and well-being. It's worth noting that the University's research extends from basic medical science to clinical applications and policy implementation, leading international standards.

The University's "Aging and Health Research Center" focuses on gerontology, and has signed a collaboration agreement with Japan's National Center for Geriatrics and Gerontology to collaborate on relevant gerontological research. The Center has established a research platform covering basic science, clinical medicine, public health, information technology, health policies, health service system, and long-term care. In terms of basic medical science, the Center's research into longevity genes has moved on from laboratory research to clinical research. Currently, researchers have discovered the genetic code that affects skin aging and are currently working on the anti-aging effects of body functions. Also, the brain science team developed an AI-based diagnostic system that can predict an individual's brain age with precision and analyze the risk of neurological and psychiatric disorders. The system can assist seniors receive preventative intervention early on which is conducive to maintaining cognitive functions. The research won the Asia Championship in the International Predictive Analytics Competition. The Center worked to implement aging lifestyle intervention measures in hopes of gradually achieving an ageless world, and using community-level sample surveys to verify its feasibility.

"NYCU Cancer Progression Research Center" is dedicated to basic and translational research on cancer progression. Using the latest "high-throughput, single-cell" screening method combined with machine learning and big data analysis, the Center conducted systematic research on head and neck cancer, and lung adenocarcinoma, which particularly affect Taiwanese people. Overcoming previous technical difficulties, the Center conducted single-cell sequencing for a very small number of circulating tumor cells and tumor tissue specimens that are difficult to analyze, as well as a retrospective analysis of tissues that contain multiple cell populations. The Center also utilized the clinical resources of the "Taipei Veterans General Hospital" to research and develop new anti-cancer biomarkers. These research findings are used to provide comprehensive precision healthcare, which includes early diagnosis, treatment response prediction, and prognosis tracking.

3 GOOD HEALTH AND WELL-BEING



13337

Students who chose the Course Units

17.2%

Percentage of All Taiwan Publications

5648

Publications in SCOPUS

Social Impact

Research Center for Epidemic Prevention Collaborated with The Yilan County Government

NYCU focuses on combining healthcare expertise and technology to provide "Digital Telemedicine Services" and achieve healthcare without borders. Amidst the outbreak of the COVID-19 pandemic in 2020, the University embraced this "new normal" service model, demonstrating its forward-looking efforts over the years and contributing positively to society and Taiwan as a whole.

In 2020, NYCU's Research Center for Epidemic Prevention collaborated with the Yilan County government to estab-

lish a dedicated coronavirus lab at the National Yang Ming Chiao Tung University Hospital in Yilan, so samples taken locally would no longer have to be sent to the lab in Taipei. One of the first places impacted by the COVID-19 outbreak—Yilan County was able to expand its screening and testing volume to 1,500 PCR tests per day thanks to the University's full support. National Yang Ming Chiao Tung University Hospital handles 80% of Yilan's PCR testing, providing swift results as the staff works hard with the Yilan County Public Health Bureau to protect Yilan and prevent the spread of the virus.

Digitalization is the current and future trend. The "NYCU Digital Medicine Center" uses technology to accelerate the development of "telemedicine" in remote areas in

Taiwan. With the University as a starting point, the Center provides off-campus medical units with digital technology services. The Center developed cloud x-ray interpretation technology and an invisible low blood-oxygen cloud platform, using cloud data streaming AI to help interpret medical information. The machine learning system will automatically generate judgments to effectively assist physicians. For example, when a chest x-ray is uploaded, the AI will determine whether there are signs of pulmonary fibrosis, the severity of pulmonary edema, or if there are any abnormalities in blood oxygen saturation, providing real-time alerts to on-duty care physicians and nurses. When local COVID-19 cases broke out, the University was the first to implement the latter smart healthcare application in the actual medical field, ahead of other academic and research institutions. These well-developed technologies are gradually being introduced into local clinics and even quarantine stations to help Taiwan develop telemedicine and the new normal "zero-contact" care during the pandemic.

Student Cultivation

Learning from Community Services

NYCU values students' study-life balance. Therefore, the University provides a total of 543 physical and online courses on the Sustainable Development Goal 3, regarding Good Health and Well-being. At the same time, the University expanded opportunities for field experience to improve students' physical and mental health, as well as their resilience to overcome challenges, and improve problem-solving skills.

Regarding physical courses, the "Yang-Ming Crusade" is composed of student volunteers who regularly visit remote areas across Taiwan, providing services like simple health checkups and health education to nearly a thousand senior citizens over the age of 65 every year. Over the past eight years, the "Yang-Ming Crusade" has completed its first comprehensive interview of senior citizens in Yilan. The group also began following up on the health of interviewees in 2017 and discovered that the proportion of senior citizens suffering from chronic illness are on the rise. More specifically, 85% of the senior citizens interviewed suffer from at least one chronic illness and almost 60% suffer from more than two. On average, every senior citizen interviewed suffers from two chronic illnesses. The proportion of senior citizens with disabilities or dementia also increases with age.

As for opportunities for field experience, students who expect to get clinical licenses at Yang-Ming Campus do an internship at the University's hospital. Computer science and information engineering students from the Chiao-Tung Campus will also analyze the use of smart care technology at the University's hospital. The University's hospital has developed different types of health

promotion and long-term care services, and has been approved to establish a level A case of the Community-based Integrated Care Service System. In response to the needs of elderly people in the community, a health promotion center was established to provide a comprehensive health implementation plan. The hospital then further integrated these plans in hopes of not only finding more individuals in need of long-term care, but also providing more comprehensive services for senior citizens in the Yilan region. After years of hard work, in 2020, National Yang Ming Chiao Tung University Hospital was approved to establish a small multi-functional service center that will allow it to provide better care for senior citizens in the community.

Stewardship

The Library and Mental Health and Counseling Center Care Mental Health of The Students and Faculty

With professional fields and humanistic communication as hard and soft power, NYCU provides diverse extracurricular activities as part of its practical actions to enrich its smart power and build a resilient campus that caters to the well-being of students and faculty members.

The library organizes a variety of book and film festivals to cultivate students' and teachers' intellectual and cultural literacy. In response to the University's commitment to improving the quality of life and mental health of the students and faculty, the libraries of each campus regularly organize art exhibitions, book fairs, and film festivals. In 2020, the library provided a venue for eight exhibitions displaying the paintings and calligraphy of individual students, faculty members, student clubs, and extramural artists, using art to improve the quality of life on campus. To encourage reading, the library organizes various book fairs and film festivals, regularly selecting books and films to display and recommend to readers. In 2020, the libraries of the two main campuses held a total of 15 book fairs and five film festivals. They screened 92 films and encouraged visitors to gain knowledge and emotional catharsis through reading.

The "NYCU Mental Health and Counseling Center" has always focused on the mental health of the students and faculty. In the spirit of environment therapy with the concept of Morita therapy, the Center screened movies every Wednesday and held 102 mental health promotion events in 2020. These events, which focused on mental health and primary prevention, sensory experiences, and inner strengthening, were attended by 2,270 people.

The Center also provided 1,435 individual secondary prevention counseling sessions to 291 individuals as part of its efforts to care for the mental well-being of all students and faculty members.



543

Course Units

04

QUALITY EDUCATION

Research

Supporting Hidden Disadvantaged Students

Professor Jiun-Yu Wu of the NYCU Institute of Education analyzed NYCU's school data to establish a risk level prediction model, hoping to uncover hidden disadvantaged students that need assistance but do not receive any aid. Research showed that although NYCU had channels that allow all truly disadvantaged students to receive aid from the Ministry of Education, over half of the hidden disadvantaged students did not seek the financial aid. These students get similar grades as the average students, but they are disproportionately more likely to receive a mid-semester warning grade. The research team presented their findings to the University so they can improve the aid programs for disadvantaged students to ensure that all students can study at ease.

Responsible Internet Usage: 2020 Survey on the Online Behavior of Taiwan's Elementary and Junior High School Students

A team of researchers led by Professor Chien Chou of NYCU's Institute of Education surveyed 6,476 elementary school, junior high, and high school students to learn about students' Internet usage and online behavior. Research showed that 2.6% of elementary school students, 2.0% of junior high school students, and 1.4% of high school students showed signs of Internet addiction. "Using social media," "watching videos," "using instant messaging," and "playing online games" are some of the most common online activities of students addicted to the Internet. Compared to average students, these students underperform in terms of learning management skills and self-management skills. This shows that Internet addiction has negative impacts on the academic and health of adolescents and children that cannot be ignored. The findings of this survey provide a look at Internet addiction among students in Taiwan for schools and governmental institutions.



Social Impact

Reinforcing Rural Education

Students in the Hsiungang Project and Schweitzer Project organize educational activities for students in remote areas of Taiwan. These activities include math classes, science experiments, team games, and sporting events. Schools in remote areas often lack teachers and teaching resources. NYCU's volunteer groups visit these areas, assisting students to learn with joy, expand their horizons, and discover the opportunities that education can bring.

Jullay International Volunteer Team Continues its Volunteer Service Despite the Pandemic

NYCU's "Jullay International Volunteer Team" stationed in India has provided volunteer services in India's Ladakh region for 11 years. Every year, volunteers visit local schools to teach digital technology, science, and English classes to support the local schoolchildren and share educational resources. Due to the pandemic, Jullay volunteers were unable to go to the region in person this year, however they still prepared online learning materials for the schoolchildren, so that the pandemic did not interrupt their education.



Innovative Use of Gravity Sensors to Improve the Physical Fitness of Sunshine Elementary School Students

NYCU's USR Project collaborated with "Sunshine Elementary School" to incorporate gravity sensors in PE classes. More than twenty 6th grade students participated in this experiment, which tested the connection between students' vertical jump performance and their health, and used these two factors to formulate training courses that will help improve their physical fitness. This allowed students to clearly see their improvement. The project also encourages students to take interest in programming languages and improve their technological innovation and application skills!



Student Cultivation

Safe Remote Learning During the Pandemic

In 2013, the University established "ewant," the largest open online extramural education platform in Taiwan. Currently, 97 universities have signed on to the platform, providing 830 courses to 53,942 registered users in 2020 with a total of 156,392 class registrations. In recent years, the platform has begun adding online high school courses, with over 57 high schools signing on with NYCU. In 2020, the platform began hosting dual-instructor courses with 196 courses, introducing the sample teaching resources of universities to high schools.



Applying Lessons Learned to Promote On and Off-Campus Professional Training

"The Continuing Education Center" regularly organizes different courses. In particular, the Business English course allows working individuals to better their English proficiency and international vision while the Hacker College trains information security personnel to improve their information security skills. The Technology Management and Research Center for Blockchain and the Ministry of Labor teamed up to launch the "Industry New Elites Pilot Program," which encourages young people interested in the digital information industry to learn about the prospects of the industry, providing On and Off-Campus participants with opportunities to further their professional skills and get the latest information on the industry through workshops and research presentations.

Non-stop Online Academic Exchanges

NYCU holds international seminars, lectures, and events where local and foreign scholars can exchange ideas with students. In 2020, the University organized 14 events, including four with real-time online conferences. Notably, the 15th Taiwan e-Learning Forum was hosted as an online conference due to the increased severity of the Covid-19 pandemic. It was the first forum of its kind to be hosted online at NYCU, allowing academic exchanges to go on as planned.



Stewardship

Library Promotion Program

Since 2019, the library promotion program has regularly organized art and cultural exhibitions, film viewings, and film/music listening zones on top of recommending new books, technologies, seminars, information on academic associations, and free online courses. In 2020, the program organized a total of 28 events as well as showing 92 movies on campus.

Art Festival

Since 2000, the NYCU Arts Center has regularly organized art festivals, literature exhibitions, and photography exhibitions. The center also invites exceptional local and foreign artists and groups to hold exhibitions, performances, or lectures on campus. In 2020, the center organized a total of 57 events.

05

GENDER EQUALITY

Research

Improve Women's Participation in STEM Disciplines and Industries

According to the UN's Gender Inequality Index, Taiwan ranks first in gender equality among neighboring Asian countries. However, women are still the minority in science, technology, engineering, mathematics (STEM) fields and politics in Taiwan. To improve women's participation in the technology sector and better understand the current state of workplace gender equality, a research team led by NYCU professor Maan-Yuh Lin began researching why women have long been underrepresented in STEM industries. The team also compared Taiwan with other countries to promote gender equality in STEM fields. Additionally, the team worked closely with the Society of Taiwan Women in Science and Technology to organize the International Women's Science Camp and inspire the next generation of females to be interested in STEM fields.

Improve Maternal and Child Health under The COVID-19 Pandemic

The COVID-19 pandemic has been raging since the end of 2019. The pandemic not only put the health of everyone on Earth at risk but also impacted people's income. Studies show that, even during the COVID-19 pandemic, there are gender differences when it comes to physiological and social issues. NYCU's research team began investigating the impact of hospitals' COVID-19 prevention measures as well as domestic and foreign travel restrictions on pregnancy and newborn health in order to improve maternal and child health.

5 GENDER EQUALITY



2986
Students who
chose the
Course Units

77
Course Units

Social Impact

Library Month: Energy Equality, Women's Role in the Green Energy Industry

For the annual Library Month event, the NYCU library chose the theme "Future, Redo - My Proposals for Sustainable and Innovative Living." Through activities such as webinars, online database exhibitions, book and film festivals, and free reading materials, the event introduces the concept of energy equality and women's role in green energy, hoping to convey the concept of sustainability and equality to teachers and students who are interested in sustainability issues. Over 800 students and faculty members tuned into the event, which generated a lot of discussions and responses.

Period Product Sharing Box Program

"The Period Product Sharing Box Program" is organized by the NYCU Student Union to address the issue of "period poverty." Period poverty is a long-standing issue in the world. Women need enough assets, such as knowledge, ability, period products, and cleansing products to have proper menstrual care. However, many people cannot afford the cost of period products, leading to physical and psychological illnesses. To alleviate this issue, the student union launched this program, placing "period product sharing boxes" at various bathrooms on campus to encourage people to share their extra period products, in order to create a period-friendly campus and do their part to end period poverty.

Student Cultivation

Gender Equality as a Core Competency

"Gender Equality" is a core competency that NYCU hopes to instill in students. Therefore, many courses in the University's general education curriculum discuss the issue of gender equality. Additionally, the Department of Humanities and Social Sciences and the NYCU School of Law also offer many professional courses that discuss the issue of gender equality from different legal and social perspectives. For example, the course "Gender and Medicine" guides students to explore gender differences, gender stereotypes, reproductive medicine and sexual selection, the sex industry and sex workers, AIDS prevention and treatment, and gender diversity in the medical field from a variety of perspectives, such as biology, psychology, and sociology. The course "Social Inequality" helps students learn about inequalities from a sociological perspective, analyzing angles like gender oppression, cultural/symbolic capital, colonialism, and stigmatization.

Gender Equality Promotion and Seminars

To improve the understanding of students, faculty members, and the general public towards sustainability issues, NYCU holds monthly webinars focused on sustainable development. The webinar entitled "The Leaky Pipeline of Women in STEM" discusses how women are underrepresented minorities in the STEM fields, from education, employment, and promotions, to leadership roles. During the webinar, the lecturer Maan-Yuh Lin and the audience also have in-depth discussions on how the situation can be improved. Most people who signed up for the webinar are students and faculty (87%), with 87.5% of participants stating that the content of the webinar can be applied to their work in the future.

NYCU is a co-organizer of the Ministry of Education's "National College Sex Education (Including AIDS Prevention) Promotion School Presentation." As one of the promotion schools, in 2020 NYCU organized a total of 5 seminars to educate students and faculty members about issues such as AIDS, STDs, sexual assault, and sexual harassment, helping participants establish the skills needed to maintain long, stable, and healthy intimate relationships, reduce the risks associated with sex, and eliminate AIDS.



10.1%
Percentage of
All Taiwan
Publications



69
Publications
in SCOPUS

Stewardship

The "Creative Courtyard" and Gender Neutral Bathrooms

The NYCU library planned a knowledge-sharing space called the "Creative Courtyard" that expresses how the courtyard is traditionally a public space where members of the community exchange and share ideas. The construction planning also included gender-neutral bathrooms, which will be a part of this diverse and open space, smashing the boundaries of traditional gender concepts to practice gender equality in the library.

Breastfeeding Policy

The NYCU library follows the breastfeeding policies of the Health Promotion Administration and the Act of Gender Equality in Employment, setting up breastfeeding rooms in an active commitment to creating women-friendly spaces and providing students, faculty members, and visitors safe places for breastfeeding. In particular, the Yang-Ming Campus Library received the Taipei Department of Health's Quality Breastfeeding Room Certificate.

Maternity Leave

In compliance with the Act of Gender Equality in Employment, NYCU provides female employees 6 months of full-pay maternity leave provided that the employee has been employed by NYCU for a minimum of six months. Otherwise, the employee is entitled to maternity leave at half pay. Additionally, when an employee's spouse is in labor, NYCU grants them five days off as paternity leave, during which wages are paid in full.

Gender Equality Promotion Campaigns for Resident Companies

NYCU provides gender equality and sexual harassment prevention training for resident companies of NYCU's incubator. This training covers laws and regulations such as the "Act of Gender Equality in Employment" and "Regulations for Establishing Measures of Prevention, Correction, Complaint and Punishment of Sexual Harassment at Workplace," as well as the reporting, investigation, and handling process of sexual harassment cases and case studies. NYCU hopes these regular campaigns will gradually increase the gender equality literacy of employees at the resident companies and eliminate workplace sexual harassment.

06

CLEAN WATER AND SANITATION

Research

Emerging Water Resources - Opportunities of Reclaimed Water and Desalinated Water

The NYCU Environmental Technology & Smart System Research Center (ETSS) analyzed the pros and cons of reclaimed water and seawater desalination. The center came to the conclusion that both have their suitable uses and advantages to avoid wasting marine resources, both should be developed equally, with desalinated water making up for the lack of reclaimed water. Therefore, ETSS helps desalination plants develop brine resources, hoping to extract high-purity magnesium, which has high economic value. This will not only offset the cost of desalination, but also decrease the amount of minerals expelled with the brine, thereby putting less strain on the environment. The center also provides better suggestions for Taiwan's water policies.

Formosa Plastics Group Collaborates with NYCU to Develop UVC LED

NYCU formed industry-academia collaborations with Formosa Plastics Group's NKFG Corporation and LIGHT SPACE Corporation to develop green energy and national epidemic prevention equipment, focusing on the main product UVC LED water purification equipment (DWM1). DWM1 adopts the UV-C UV light in a UV wavelength of 200nm-280nm, which is optimal for disinfection and sterilization, and is able to directly destroy the central structure that results in instantaneous death or loss of production ability for viruses, bacteria, and algae, in order to achieve rapid sterilization. Additionally, to better manage the quality of water used in Taiwan's semiconductor and electronic manufacturing processes, the product uses exposure sterilization on algae by applying UV-C deep UV light, allowing for easy installation and effective energy conservation. Not only does the product avoid secondary water pollution, it also has a long lifespan that does not require prolonged periods of maintenance by personnel. It is able to ensure the cooling efficiency of semiconductor manufacturing equipment, reduces the downtime for maintenance derived from the cleaning of water cooling systems, and is more environmentally friendly.



5.3%
Percentage of All Taiwan Publications

Social Impact

Transforming the Nanliao Seawater Desalination Plant into a Water Resource Startup Hub

NYCU's Environmental Technology and Smart System Research Center (ETSS) was commissioned by the Water Resources Planning Institute of the MOEA's Water Resources Agency to plan and manage the "Nanliao Water Resource Startup Hub." ETSS set up mobile container desalination units at the innovative water resource technology R&D, testing, and demonstration base next to Hsinchu's Nanliao Harbor to provide a platform for the industry to conduct R&D, testing, and demonstrations of innovative water resource technology and support small and medium-sized enterprises in their efforts to upgrade their technologies and develop innovative technologies. The center will continue to

promote water resource IoT technology, disaster prevention technology, water supply and supply management technology, and water resource and energy integration with the long-term vision of technology cultivation and value-added industry applications. Going forward, the center will work with local enterprises, government agencies, and academic institutions to establish a cross-regional and interdisciplinary resource sharing platform to provide services like technical support and cross-industry cooperation, creating opportunities for collaboration between enterprises with the ultimate goal of becoming a park with circular economy and diversified incubation.

Student Cultivation

The Hydraulics and Ocean Engineering Program

To equip students with rigorous and comprehensive knowledge of Hydraulics and Ocean Engineering, the curriculum of this program is designed with equal emphasis on theory and practice. The courses can be divided into two categories based on content: The basic courses include fluid mechanics, hydrology, hydraulic engineering, groundwater, engineering statistics, engineering economics, ocean engineering, etc. The application courses include: open channel hydraulics, environmental diffusion theory, water resource planning, sediment transport theory, groundwater and pollution transport, advanced fluid mechanics, wave theory, coastal process, ocean engineering, and marine environment. Students can choose courses based on their interests and expertise.

Research Team Presents Research Outcome

NYCU's Environmental Technology and Smart System Research Center (ETSS) and the Water Technology Alliance led a research team at the Taiwan International Water Week. The team, sponsored by GSD Technologies, presented the findings of the ETSS and WTA along with the Water Affairs Organization. The alliance received support from many academic and government institutions throughout the event. Additionally, to promote the "Water Technology Industry-Academia Alliance," NYCU's ETSS and the WTA allow students and research teams to assist on visits and expert consultations with the alliance's member manufacturers each year and organizes technical seminars for member manufacturers in hopes of enhancing Taiwan's water environment industry and driving product and service quality as well as technological competition.



14
Course Units



375
Students who chose the Course Units

125
Publications in SCOPUS

Stewardship

Domestic Wastewater Recycling

NYCU makes full use of integrated water resource management and extensive use of water-saving equipment to greatly improve the efficiency of water use and water conservation in dormitories. NYCU estimated wastewater volume based on the number of students living in the dormitories, allowing it to implement and promote water-saving in everyday life. The University also established rainwater harvesting and wastewater recycling systems, which provide the water for flushing toilets and watering plants, beautifying the environment, providing clean water resources, and improving water conservation rates.

07

AFFORDABLE AND CLEAN ENERGY

Research

New Material Exceeds the Limit of Planck's Law

NYCU Photonics Professor, Shawn-Yu Lin published his research on a new "Super-Planckian" material in Nature Scientific Reports. The light emitted by the material when heated appears to exceed the limits set by that natural law for black bodies, and therefore can be used to realize super-intense, tunable LED-like infrared emitters. The material can be used to generate highly efficient light sources when heated through waste heat recycling or partial infrared for thermophotovoltaics applications.

Highly Efficient Quantum Dot Photocatalysts for Hydrogen Production

NYCU Materials Science Professor, Yung-Jung Hsu has successfully developed ZnSe-AgInSe₂ quantum dot photocatalysts. By controlling the proportions of Zn and Ag in the alloy, the quantum yield of H₂ production can reach 3.4 % under irradiation at 600 nm. This technique for improving H₂ production can be applied to hydrogen fuel cells, providing an energy-saving and carbon-reducing green energy technology on top of an already sustainable form of renewable energy to reduce our reliance on highly polluting fossil fuels.

7 AFFORDABLE AND CLEAN ENERGY



25

Course Units



1895

Students who chose the Course Units

Social Impact

New Electricity Saving Initiative

In response to the Paris Agreement signed in 2016, the Taiwanese government declared its Nationally Determined Contribution, vowing to reduce emission levels to 20% below that of 2005 by 2025. NYCU has vowed to implement the government's "New Electricity Saving Initiative". The University established the Energy Conservation Promotion Committee to supervise its annual electricity and oil use reduction goals. The University also actively uses new technologies to develop renewable energy, including solar cells, fuel cells, and hydrogen energy. NYCU provides these technologies and the energy generated to the agricultural, industrial, and technology sectors. NYCU also developed an LED fishing light attractor to assist offshore fisheries

reduce electricity and oil consumption while increasing profit.

Cultivate Energy-Saving Startups

Committed to reducing mankind's reliance on coal and petroleum, the NYCU Center of Industry-Academia Collaboration is currently supporting eight energy-saving startups. For example, "Friendly Energy Corporation," "Songyi System," and "Jackson Lighting" all make LED lights; "Jotun Technologies" does biogas power generation; "Hsiung Han Technology" and "DaDaDa Co., Ltd." develop energy-saving management systems; "Megago Tech Co., Ltd." and "InnoKnight Inc." specialize in smart electric vehicles and electric vehicle charging fee calculation systems.

Student Cultivation

Renewable Energy Courses

The NYCU Continuing Education Center offers energy technology courses that introduce different kinds of energy conversion technology, including energy generation (solar energy, wind energy, biofuel, geothermal energy, and marine energy), energy storage (energy storage systems, hydrogen energy, fuel cells, and applications), and energy conservation (electricity and energy-saving lighting, energy-saving building, energy-saving air conditioning, and industrial energy saving). The courses also explain global energy development trends, as well as Taiwan's energy policies and energy transformation targets, thereby helping members of the public understand the urgency and necessity of developing renewable energy.

Renewable Energy Technology Conference

In 2020, NYCU held the International Conference on Emergent Functional Matter Science, which featured the world's latest forward-looking renewable energy technology. Participants discussed three major research topics: energy & optoelectronic materials, sensor & biotech, and emergent nanomaterials. This allows students to understand the current development of green energy technology.

10.8%

Percentage of All Taiwan Publications



Stewardship

Green Building

Since 2015, NYCU has followed the government's "Green Building Implementation Program" regarding buildings that have passed Taiwan's green building certification, EEWH. The University has five certified green buildings, including one diamond-level, two silver-level, and two bronze-level buildings. These buildings all have architectural designs that emphasize symbiosis with the environment and sustainable development, in line with the certification's nine indicators, which include biodiversity, energy-saving, and CO2 emissions reduction.

Solar Energy Generation

In 2020, solar PV power generators were installed in the Yangming, Guangfu, Boai, and Tainan campuses. According to the open information available on the monitoring website, these generators generated a total of 1,923.14 kWp of power. They are expected to conserve 2.413 million kWh of power each year, drastically reducing carbon emissions by 4,356 metric tons, which can help reduce the overall demand for carbon-intensive energy.



1343

Publications in SCOPUS



08

DECENT WORK AND ECONOMIC GROWTH

Research

Improve the Health and the Safety at the Workplace

"The NYCU Lab of Occupational Health and Safety" (LOHAS), supervised by associate professor Kuo-Yang Kao in the Department of Management Science, conducted a series of research investigating employee behaviors related to job performance, employee health, and safety performance such as work stress, job attitude, motivation, and behavior to explore measures that can be taken to enhance employee well-being. For example, LOHAS research linked mentorships to job search behaviors, which shows the importance of mentorships. LOHAS also found that employees working under supervisors with the correct attitude towards workplace safety will have better workplace safety knowledge and behaviors. The mission of LOHAS is to help supervisors build a healthy and safe work environment to increase job performance, improve employee well-being, and decrease accidents and injuries.

Conflict, Justice, Decolonization: Critical Studies of Inter-Asian Societies

The NYCU International Institute for Cultural Studies(IICS) is an inter-university and interdisciplinary academic institution that combines the research talent and teaching resources in social sciences and humanities across National Yang Ming Chiao Tung University, National Tsing Hua University, and National Central University to promote interdisciplinary, inter-university, and international research. The IICS is committed to discussing issues of inequality, focusing on social inequalities faced by migrants, refugees, and stateless people. Particularly, the project "Toward a Society of Equality and Coexistence in the Inter-Asian Context: Civic Participation, Legal Reform, Social and Artistic Intervention, Trans-local Free Association" covers a number of research topics related to the prohibition of wage discrimination, migrant rights, and transnational labor migration. The IICS also holds NGO forums on empowering Southeast Asian migrants and refugees, discussing societal conflicts and inequalities from multiple angles in an attempt to achieve inter-Asian equality and coexistence through legal reform as well as social and artistic intervention.

8 DECENT WORK AND ECONOMIC GROWTH



22801
Students who chose the Course Units

475
Course Units

Student Cultivation

Higher Education Accreditation for Teaching (HEAT)

In 2018, NYCU became the 50th international partner of Advance HE from the UK. Through internationally recognized higher education professional training, NYCU assists at least 25 faculty members and doctoral-level talents to enhance their higher education teaching capabilities. NYCU currently remains the only university in Taiwan to have systematic higher education training and accreditation in line with the Professional Standards Framework. By collaborating with Advance HE and its other international partners, the NYCU Higher Education Accreditation for Teaching uses learner-centric teaching design and interactive collaborative learning activities to introduce diverse and innovative teaching methods and guide instructors to design courses in line with constructive alignment. To this day, NYCU has trained 78 teachers, including 4 from NTHU, 1 from NTU, and 1 from NCKU, and 23 doctoral and postdoctoral talents to elevate their professional teaching skills, of which 60 professors, doctoral and postdoctoral talents were recognized by the HEA Fellowship.

Workplace Health and Safety Course

The goal of NYCU's Institute of Environmental and Occupational Health Sciences is to train scientists and professional talent in environmental health, environmental protection, occupational health management, and occupational

disease prevention, as well as government and social management leaders. The institute offers many professional courses regarding occupational health. For example, Environmental and Occupational Epidemiology teaches students about basic concepts, research methods, and practical applications of occupational epidemiology. The course teaches students about occupational health management theories and models used for occupational hazard assessment and controls so that they can actually improve occupational health and safety. Additionally, the Occupational Health and Safety course offered by the Department of Management Science guides students to reflect on and understand contemporary occupational health issues to cultivate students' ability and interest to carry out research regarding occupational health and equip them with the knowledge and skills to implement occupational health plans.

Legal Academic Forum

The NYCU School of Law holds two legal academic forums each month, inviting international scholars to discuss various issues. The forum titled "The Digital Economy and the Guarantee of Equal Work for Equal Pay" discussed workplace gender equality under the digital age. Also, the forum titled "Why do we Need Unions? The Labor and Protest of Flight Attendants" takes a closer look at the first large-scale strike organized by female employees in Taiwan's service industry and discusses what union organizations mean to flight attendants.

Graduate Employability

NYCU graduates possess outstanding qualities, making them the top choice of corporations across all fields. Cheers Magazine's 2020 Corporate Favorite College Student Survey showed that NYCU graduates ranked in the top 3 in "professional knowledge and skills", "innovative skills", "problem-solving skills", and "digital applications". Furthermore, Global Views Monthly's big data report on "universities with the highest starting salary for graduates" indicated that graduates from NYCU's information science field have an average starting salary of NT\$40,000, which shares the top spot with three other elite universities in Taiwan.

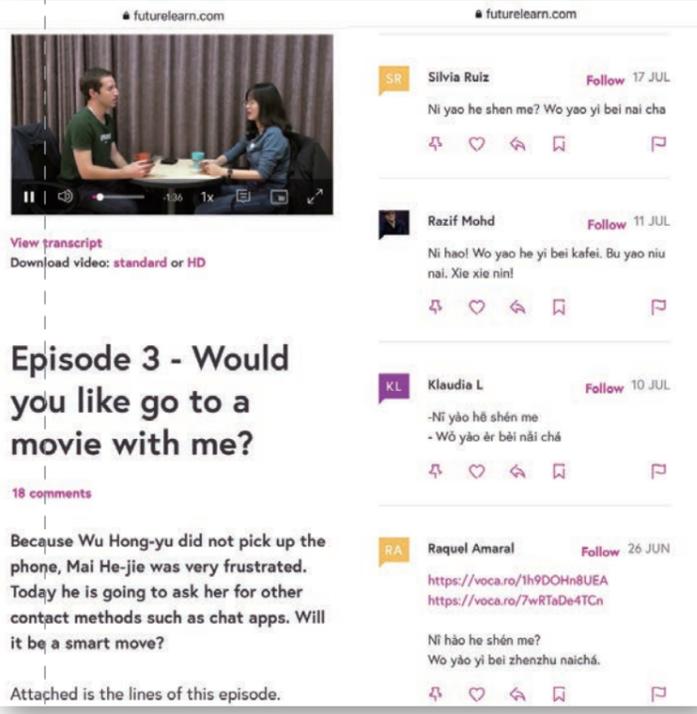
Social Impact

Future-Learn Campus - A Lifelong Learning Platform with Over 30,000 Users Worldwide

The NYCU Center for Continuing Education has teamed up with Europe's largest online learning platform Future-Learn to develop online courses taught in English, an open education resource for people of all nationalities, races, genders, and ages. Course topics cover creative thinking, everyday Mandarin, and technology law. In 2017, NYCU launched the "Using Creative Problem Solving" course with 21,510 people from 148 countries attending. In 2020, NYCU launched the "Fall in love with Mandarin" course and the course quickly attracted users around the world. So far, over 7,000 people have signed up for the course. The NYCU Center for Continuing Education is committed to providing global citizens with open and high-quality educational resources to narrow the gap in education resources caused by wealth disparity and contribute to lifelong learning around the world.

Rebuild After PhDs' Industrial and Skill Expertise

The core mission of the Rebuild After PhDs' Industrial and Skill Expertise (RAISE) program is to train PhD-level industry elites and secure industry-academia collaborations with partner enterprises to reflect social practice and responsibilities. RAISE is mainly about establishing a platform for the industry-academia research training of high-level talent in hopes that, after practical on-the-job training, PhD-level talent can be matched with key industries for future career development. The professional training gives PhD-level talent the basic skills needed for the workplace. The program also has advanced and innovative training courses to further cultivate each participant's creativity, leadership skills, and practical abilities.



Stewardship

Labor Safety Award

In 2020, NYCU was awarded the Taipei City Labor Safety Award by the Taipei City Department of Labor. This award recognizes institutions and personnel with outstanding performance in promoting occupational safety and health. Not only was NYCU the only university to win the award, but it also received dual recognition as an institution and for its outstanding staff! Over the years, NYCU has been recognized by many awards: In 2016, NYCU received the international OHSAS 18,001 certification. In 2017, the University installed the Biorisk Management System CWA15793 and was given an award by the CDC. In 2019, NYCU was deemed outstanding by the Campus Occupational Safety and Health Management System of the Ministry of Education. Going forward, NYCU will continue to establish an even more

comprehensive occupational health and safety management system to enrich students and the faculty's labor rights knowledge, literacy, and awareness, ensuring the ability of students, faculty, and employees to work in a safe research and learning environment and providing safe, convenient, and friendly occupational health and safety services.

Laboratory Health and Safety Training

To implement health, safety, and environmental protection and ensure the well-being of faculty, the Center for Environmental Protection and Safety and Health organizes regular laboratory health and safety training to enhance student and faculty members' laboratory health and safety concepts, lower the risk of accidents, and strengthen laboratory personnel's

hazard recognition and prevention skills as well as knowledge of relevant legal responsibilities.

Workplace Dignity and Policies

NYCU handles faculty and staff remunerations and evaluation standards in an open and transparent manner, making sure to follow regulations governing employee recruitment, selection, appointment, remuneration, evaluation, and promotion stipulated in the Ministry of Labor's Act of Gender Equality in Employment. The University does not discriminate against employees based on gender, sexual orientation, age, race, religious beliefs, or any other factors. To maintain a harmonious workplace and ensure the occupational safety and labor rights of all employees, NYCU will not tolerate any form of workplace bullying or discrimination between supervisors and employees.

3.5%

Percentage of
All Taiwan
Publications



77

Publications
in SCOPUS



009

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Research

Smart River Planning and Smart Flood Prevention Platform Construction Plan

"NYCU's Disaster Prevention and Water Environment Research Center" helped the New Taipei City Water Resources Department implement the "New Taipei City Smart River Planning and Smart Flood Prevention Platform Construction Plan," which aims to compile and obtain key water information. When it comes to urban flood prevention, it's important to not only buy more warning time to prevent disasters, but also quickly pinpoint areas at risk of flooding. The smart urban flood prevention platform compiles water information, such as weather radar returns and ground-level rainfall monitoring warnings. With automated IoT value-added analysis of the real-time data, the platform provides real-time information for urban drainage and river flood warning systems. By integrating IoT technology, big data water information analysis, and AI applications, this platform has become a useful tool in urban disaster prevention that can effectively help mitigate urban flooding.

Sustainable Urban Buildings and Environments

To improve the environment and quality of life while considering the circular use of energy and materials, "DIYGreen" utilized recycled bottles to create circular farm systems and green rooftops that not only provide heat insulation, and reduce indoor temperature and the heat island effect, but also minimize flooding and noise, providing a creative and effective new solution that conserves energy and reduces carbon emissions! The process of urban renewal generates a lot of waste, with construction being one of the main causes of CO2 emissions. Additionally, the extreme weather patterns in recent years coupled with the increasingly severe urban heat island effect have prompted further research into new construction methods. "The Transdisciplinary Design Innovation Shop" (TDIS) uses specially engineered domestic cross-laminated timber to strengthen the structure of buildings. This technique not only reduces the construction period and the manpower needed, but also allows the timber to be taken apart and reused. This method allows materials to be recycled in high-density cities, providing more eco-friendly and more efficient urban renewal options.

Forward-Looking Research in Collaboration with ASUS

"ASUS Intelligent Cloud Service Center" (AICS) and NYCU teamed up to initiate the "Hua Yang Project," an industry-academia collaboration focused on three major AI forward-looking research projects, including: "using machine learning to predict the prognosis of non-small cell lung cancer," "pre-clinical dementia drug development assessment based on neuroimaging," and a "smart neuroimage diagnostic platform." NYCU and ASUS also collaborated in terms of education, launching the AI for Medical internship program to train professional talents in the field. With technical support from ASUS, NYCU is confident that it will be able to accelerate industry-academia medical research focused on lung cancer, dementia, neurosis, and other major illnesses.



54
Course Units

Social Impact

Industry Accelerator and Patent Development

Since its inception in 2013, the Center of Industry Accelerator and Patent Strategy (IAPS) has cultivated over 750 startups and research teams, and facilitated over NT\$20 billion of early-stage investment for startups.

Technology Camp

The NYCU Center for Teacher Education and Department of Electrical and Computer Engineering organized a technology camp for junior high school students to experience important technologies like automatic facial recognition, robotic mobility aid systems, and inverted pendulums. The camp also included an electronic circuit DIY experience where junior high school students could make their own ultrasonic ruler. The hands-on experience was meant to inspire the students' curiosity and interest in electrical engineering technology and give them a better understanding of the scientific applications of physical phenomena. Additionally, "the NYCU



Service-Learning Center" collaborated with "TSMC" to organize a one-day technology camp. Teachers and students from Nanliao Elementary School were invited to visit NYCU's Guangfu Campus to play a programming board game, which is an easy way to show students the everyday applications of integrated circuits. The event was an educational and beneficial experience between an elementary school, a university, and a corporation.



Organizing the International Startup Competition—the "Hult Prize"

"The Hult Prize"—dubbed "the Nobel Prize for university students"—is a global startup competition for university students led by the United Nations Foundation. The NYCU Center of Industry-Academia Collaboration (CIAC), Global MBA program, sponsors like meet.job, and students from various fields came together to organize the 2021 competition. The theme for the 2021 competition is "Food for Good: Transforming Food into a Vehicle for Change." Students are tasked with creating new business models that rethink the connection between food production, distribution, and consumption. Teams began brainstorming and planning in 2020 and in the end, the team chosen to represent the University in the

2021 regional finals was the PHxTW team (Bukid) composed of students from the Philippines and Taiwan. PHxTW presented a mobile-based Enterprise Resource Planning (ERP) management system that combines agriculture and education, hoping to use technology to solve issues between Southeast Asian farmers and the market.

Biomedicine Maker Program—Cultivating Innovative Interdisciplinary Talents

The Yang-Ming Campus Continuing Education Center, Makerspace, the Digital Medical Center, CTAI, and the VR Center worked together to launch the four-week "Biomedicine Elite Maker Program," which provides high school students interested in medicine and engineering with hands-on learning opportunities that can help them understand how new technology is applied in the field of medicine. The program aims to cultivate interdisciplinary biomedicine maker talents knowledgeable in not only medicine, but also engineering. Many past participants praised the program for giving them the opportunity to see, hear, and learn medical knowledge that is not normally accessible. They also said that the course taught them to look at problems from different perspectives and to create new things in innovative ways!

2580
Students who chose the Course Units



Student Cultivation

Interdisciplinary Application and Cultivating Entrepreneurship

With a focus on "caring for disabled people" and "developing inclusive products," the Entrepreneurship and New Product Development course taught by Professor Sirirat Sae Lim of the Management of Technology, College of Management, NYCU encourages students, people with disabilities, and stakeholders to think from each other's perspectives and get in touch with one another to create solutions in innovative and entrepreneurial ways. The course won first place in the "Sustainability Teaching Practice and Achievements Competition" co-organized by the Taiwan Institute for Sustainable Energy and the CTCI Education Foundation.

To cultivate students' entrepreneurial and innovative capabilities, the University established the "Venture Innovation Program" (VIP). The program features courses that invite industry professionals to share their practical experiences. Students can create entrepreneurial proposals and, with guidance from industry professionals, cultivate future entrepreneurial skills and experiences. In addition, to cultivate interdisciplinary skills in terms of the humanities and engineering, NYCU established the Design and Innovative Technology Program (DITP). The program integrates teaching resources from the Graduate Institute of Architecture, the Institute of Applied Arts, and the Institute of Communications Studies to provide students with courses across four major fields, namely architectural design, industrial design, sustainable environment and smart city design, and innovative technology design. The mostly project-oriented courses aim to cultivate students' empathy towards society and the environment, encouraging them to solve real-world problems creatively.



6.3%
Percentage of
All Taiwan
Publications



351
Publications
in SCOPUS

Stewardship

Among the resident companies of "NYCU's Center for Industry-Academia Collaboration" (CIAC), there are many manufacturers committed to the development of sustainable and environmentally friendly green energy technologies. By collaborating with NYCU's technology research and development team, these companies are able to accelerate the commercialization of their products. For example, Jotun Technologies is committed to gas purification technology, including odor removal and organic waste gas removal. Hsiung Han Technology focuses on energy-saving services with the goal of developing and installing customized energy management systems. Megago Tech specializes in smart electric vehicles, self-driving cars, and green energy application project integration and manufacturing. InnoKnight Inc. develops electric vehicle charging fee calculation systems to help electric car owners calculate charging fees for public charging stations at their apartments or office buildings. AgriTalk Technology is committed to providing society with healthy, pesticide-free agricultural products. It has become a model for the production of new agricultural technology and pesticide-free agricultural products by introducing a comprehensive agricultural AI smart technology management system. In addition to supporting resident companies, the Center also actively helps the University establish sustainable green energy-related industry-academia collaborations. For example, the Center matched the NYCU Orchid House team and Professor Cheng-Huan Chen's integrated daylight lighting and green electricity skylight system to establish an industry-academia collaboration with a German company to construct sustainable development energy houses.

10

REDUCED INEQUALITIES

Research

Research on Health Inequality

Since it was founded in 1975, the University's School of Medicine has been committed to resolving medical issues in remote areas and maintaining long-term tracking and research into medical resource development and residents' health in remote areas of Taiwan. During the summer and winter holidays, NYCU teachers and students visit remote areas to conduct cancer prevention work. They collaborate with the "Taiwan Cancer Society" to conduct health education, cancer prevention advocacy, and cancer screening in 319 villages and townships across Taiwan. They then compile relevant advocacy and research results into dozens of first-class papers published in academic journals. After a decade of hard work, Taiwan's cervical cancer mortality rate has dropped from among the highest cancers in women to fifth place. In addition, the medical resource gap between urban and rural areas has been reduced.

NYCU has long studied issues like health inequalities suffered by the indigenous peoples, dedicating resources to promoting the development of indigenous health. For example, the University conducted follow-up studies on the demographic and alcohol abuse behaviors of the indigenous Atayal people and promoted alcohol abuse prevention campaigns to local teens, successfully reducing alcohol abuse behaviors in adulthood. Moreover, to reduce the long-term issue of higher accidental injury and mortality rates of indigenous people, the government commissioned the University to implement its Indigenous Accidental Injury Prevention Management Center Project. This included visiting and conducting in-depth interviews in various indigenous settlements, establishing and analyzing a database for various settlements, and helping to improve unsafe environments. The results of the research were used to formulate the Indigenous Peoples Health Act. NYCU organized international seminars, inviting Canadian indigenous health scholars and practitioners to visit Taiwan and compare notes with their Taiwanese counterparts. By comparing experiences, the scholars discussed the existing indigenous healthcare system and policies and proposed medical systems and services conducive to indigenous autonomy.

10 REDUCED INEQUALITIES



124

Course Units

Social Impact

Telemedicine Solves the Dilemma of Insufficient Medical Resources in Rural Areas

NYCU founded the "Digital Medical Center" (DMC) to form an alliance with "National Yang Ming Chiao Tung University Hospital" and Yilan County Health Agencies to resolve the issue of insufficient medical resources in Nan'ao Township through the "remote ICU." The project first introduced remote ECG monitoring. Professional healthcare workers would help people put on ECG leads, and the real-time ECG data would be sent to nearby hospitals where doctors could interpret them online, providing a basis for diagnosing clinical diseases. The School of Nursing has implemented the "Tribal Star Incubation: Intelli-

gent Health for Remote Areas" project. The "DMC" participated in the project to train healthcare professionals in remote areas on how to use new tools like remote ECG monitoring to solve healthcare issues in indigenous communities.

Medical science camp for remote areas: NYCU regularly invites elementary students from mountainous indigenous settlements to visit the campus. Many departments in the University also work together to implement the "Tribal Star Incubation: Intelligent Health for Remote Areas" project in the Atayal settlement in Nan'ao Township, hoping to help the local community train medical professionals with cultural sensitivity and digital literacy to resolve the long-term local issue of insufficient numbers of healthcare workers.



6.7%

Percentage of All Taiwan Publications

Student Cultivation

"Practice of Medicine, We Can!" Internship Course

In line with the Ministry of Health and Welfare's government-financed medical professional training plan, the School of Medicine is committed to formulating localized training courses. The School of Medicine hosts a summer remote area medical internship course "Practice of Medicine, We Can!" to strengthen government financed students' values and vocation. For the course, 32 NYCU medical students take turns to do a two-week on-site internship to better understand the medical resources, healthcare needs, and cultural characteristics of remote areas. Students also get a better understanding of day-to-day healthcare in remote areas through a diverse variety of courses, including hospital history, observing medical consultations in different departments, mobile healthcare services, and at-home care.



4891

Students who chose the Course Units

Stewardship

Special Admissions Channel for Indigenous and Disadvantaged Students

NYCU has separate admission rubrics for low-income and low-middle-income students, indigenous students, students with disabilities, immigrant students, and other students with economic or cultural disadvantages. These new rubrics focus on the students' motivations and process of overcoming adversity, providing lower screening standards, simplified selection processes, and reduced registration fees to increase their chances of admission. NYCU has also participated in the Ministry of Health and Welfare's "Plan for the Training of Medical Personnel for Aboriginal Communities and Outlying Islands," training minorities and those from remote areas where access to education is difficult to become medical professionals. NYCU also established an Indigenous Students Resource Center to provide student life, schoolwork, and career counseling, career development assistance, ethnic study activities, and other forms of assistance for indigenous students.



82

Publications in SCOPUS



11

SUSTAINABLE CITIES AND COMMUNITIES

Research

Sustainable Urban Renewal Plan "House For All" - Filling the Urban Gap with Innovative Housing

The current high eligibility threshold and up to 20-year waiting periods for urban renewal in Taiwan are little help to those who urgently need to improve the quality of their housing conditions. "The NYCU Transdisciplinary Design Innovation Shop" (TDIS) proposed a micro-urban renewal model that integrates innovative architectural design and social design with an accelerated renewal process, hoping to resolve the issues of overcrowding, climate crises, and social isolation that plague modern cities. The project also aims to increase the proportion of affordable housing and bring new types of shared facilities to communities. "House For All" will fill small vacant spaces throughout Taipei City as "seed housing." The project design uses structures that can be assembled and disassembled repeatedly, making the construction process faster, cheaper, and less polluting. The interior features efficient "shared walls" and "open platform" designs, creating more flexibility in how spaces can be used compared to traditional houses. Residents can adjust the layout to suit their needs without extra renovation, which in turn reduces construction waste. "House For All" can also alleviate the mental health problems generated by "social isolation." The housing complexes are equipped with residential units, shared kitchens, laundry stations, charging stations, and Wi-Fi services that can be used by residents and shared with the community to improve the community's overall quality of life. These housing complexes can also be used as a small social gathering venue to hopefully improve the life quality and well-being of the urban population.

Smart Green Buildings: Innovative Energy-Saving Facade Units

The NYCU TDIS and "The Plastics Industry Development Center" (PIDC) worked together to develop a modularized framework system, developing long fiber reinforced thermoplastics to create building facades with different functionalities, including digital interactive modules, vertical garden modules, and temperature control modules. The collaboration has also researched different surface heat insulation materials, combining water-soluble resin and aerogel to design lightweight heat insulation modules that can be installed with dry construction techniques. In terms of the expressiveness of the facades, the team also experimented with temperature-sensitive color-changing powder to present an intuitive and easy-to-understand design with different color blocks for different temperature ranges. The biggest feature of this project is the concept of "Upcycle" which uses recycled plastic materials to develop more physical products with more diverse functions. By doing so, the project also creates new value-added re-engineering projects and interdisciplinary cooperation for the industry.

11 SUSTAINABLE CITIES AND COMMUNITIES




4887
Students who chose the Course Units

Social Impact

Creating New Highlights of Rural Campuses

Due to the global pandemic, the volunteer group of NYCU's The Bridge of ASEAN and Taiwan (BAT) conducted an architecture-focused volunteer service project at the Xincheng Township of Hualien County under the guidance of Director June-Hao Hou and Associate Professor Pei-Hsien Hsu of the Graduate Institute of Architecture, teacher Cheng-Hui Lin of the Taipei Municipal Daan Vocational High School Department of Architecture, and Executive Director Chi-Ming Chien of the Association of Humanitarian Architecture (AHA). Over the course of 14 days, the volunteer group built a tree platform with both teaching and recreational functions for Xincheng Elementary School, and created a public space for travelers and residents to relax and take in the scenery along the streets of the village.

Archiving Local Memories and Creating Timeless Energy

After receiving a donation of over 2,000 puppet theater-related objects from the Seden Society Puppet Theater Foundation in 2019, NYCU used digital technology and networks to transcend the physical limitations of museum spaces, elevating the museum's functions of collection, display, education, and public services. NYCU created a digital puppet theater museum, including a digital archive and catalog of the artifacts, a timeline of puppet theater art, and a 3D virtual museum website, as well as features of old puppetry artists and research into puppet theater troupes in Taiwan. The museum provides diverse and up-close learning opportunities to enrich people's lives and also embodies the University's efforts to be more active towards the sustainable development of the cultural industry and employment.

Student Cultivation

Courses, Hands-on Practices, and Exhibitions—They Are all Crucial for Learning

In line with global teaching and professional trends, the "NYCU Graduate Institute of Architecture" actively integrates innovative digital art, urban design, architectural design, and other interdisciplinary professions; in addition, the Institute has continuously established international exchanges and collaborations with foreign universities. Going forward, the Institute will continue to work on promoting emerging architecture and design, environmental and sustainable issues, design science and digital culture, as well as technological governance and infrastructure construction. At the same time, it encourages students to convert their knowledge into practical experience and participate in exhibitions or other related activities. For example, "Floating Bamboo," a piece of bamboo artwork featured in the "2020 Taoyuan Land Art Festival," was created by Associate Professor Pei-Hsien Hsu, teacher Yen-Po Yeh, and four graduate students for the "Design and Implementation" course. The piece pursues breakthroughs and combines design and research. The "Immersive Projection Dome Structure" was created by Professor June-Hao Hou, teacher Chi-Li Cheng and four team members for the experimental culture and technology exhibition project "Future Vision Lab" organized by the Taiwan Contemporary Culture Lab (C-Lab) Technology Media Platform in 2020. The piece was exhibited in front of the Political Warfare Building for a three-month exhibition that the public could visit for free to experience the world of the future.



Design and Innovative Technology Program

Design and Innovative Technology Program (DITP) is an interdisciplinary program offered by NYCU's Department of Humanities and Social Sciences. The program consolidates teaching resources from the Graduate Institute of Architecture, the Institute of Applied Arts, and the Institute of Communications Studies to provide basic courses in different fields for undergraduate students interested in innovative design and art. The course structure of this program can be divided into four main categories: (1) architectural design, (2) industrial design, (3) sustainable environment and smart city design, and (4) technology innovation design. The courses are aimed at cultivating interdisciplinary skills that balance humanities and engineering.




129
Course Units



Stewardship

AHA's Local Actions

The Association of Humanitarian Architecture (AHA), led by Professor Shu-Chang Kung of NYCU's Graduate Institute of Architecture, collaborated with the Forestry Bureau in 2020 to build a number of wooden structures in remote communities of Hualien and Taitung. The Association applied its experience working with locally-produced timber to build a wooden bullpen and wooden bookcase for the baseball team of Bei-Nan Elementary School in Taitung and a landscape image design at the entrance of Chulu Junior High School using local Taiwan cypress and Japanese cedar timber. The project is a collaboration between professionals in the wood construction industry, the AHA, and architecture, interior design, and woodworking students from St. Joseph Technical Senior High School. Together, this industry-academia team used local materials to create sustainable structures, bringing out the value of humanitarian architecture and knowledge-sharing with the spirit of local empowerment and eco-friendly cycles.



12

RESPONSIBLE CONSUMPTION AND PRODUCTION

Research

Using Domestic Timber to Develop Cross-Laminated Timber Buildings

In the past, Taiwan's architecture and urban environment were closely connected to the steel and cement industries, resulting in overly uniform construction and pavement materials. NYCU's "Domestic Timber CLT (cross-laminated timber) Building Development" project aims to address this problem, as well as the large volume of waste generated by urban renewal and even the large volume of CO2 emissions from construction projects. The project uses domestic CLT to create efficient and strong building structures. In addition to drastically cutting construction time and the amount of labor needed to complete a project, this technique also allows for the timber to be disassembled and reused, allowing building materials to be recycled in densely packed cities, providing an eco-friendly and highly efficient urban renewal option. Taiwan's tree farms will also be able to achieve a positive forest ecological cycle through the production and consumption of wood. Developing CLT building units can showcase the adaptability and strength of domestic timber for construction, and lead to a review of existing wood construction laws and create an emerging industry chain that integrates tree farms, techniques, and even innovative design. This can make Taiwan's forestry industry more visible on the global stage and raise awareness about sustainable building materials, thereby improving urban architectural environments.

Developing Innovative Energy-Saving Facade Units for Smart Green Buildings

To boost the recycling and reusing of resources, NYCU's "Innovative Energy-Saving Facade Units for Smart Green Buildings" used the concept of upcycling to develop more practical products with more diverse functions using recycled plastic materials, while developing value-added re-engineering projects and interdisciplinary collaborations for the industry.

Local Sustainable Actions at Sixth Fuel Factory

In the spirit of "small and slow," the NYCU Institute of Applied Arts' neighborhood outreach program created participatory sustainable lifestyle designs for the local community around the Sixth Fuel Factory site. The program included using recycled materials to build and operate a canteen, a community chicken coop, and a food scrap collection for chickens. The project also promoted slow food movement, inviting "Xiangshan Farmer's Market" to set up regular stalls, promoting eco-friendly pesticide-free farming, and sharing fresh seasonal produce and healthy homemade food products with locals. The project also celebrates military village cuisine, and it opened a community canteen; in addition, it regularly holds "Work together, Eat together" events, and other activities to build a community network and promote eco-friendly living at Sixth Fuel Factory. Through these "Small and Slow, Micro to Macro" sustainable actions, NYCU aims to achieve the vision of rejuvenating the history and landscape of the Sixth Fuel Factory.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



3153

Students who chose the Course Units



77

Course Units

Social Impact

Eco-Friendly Production and Consumption Cycle

"NYCU's Center of Industry Accelerator and Patent Strategy" (IAPS) is committed to creating an entrepreneurial ecosystem of transnational and cross-industry collaboration. "The IAPS" assisted the social enterprise Blueseeds, which was recognized by B Lab's "Best for the World 2021" list in the community category, to establish ESG mechanisms and the application and promotion of blockchain technology in agriculture to demonstrate corporate social responsibility, enhance its corporate image, and exert social influence. Blueseeds is committed to promoting natural farming, placemaking, and a profound organic lifestyle, using new business models to facilitate good production and consumption cycles.

Student Cultivation

Campus Environmental Protection, Plastic Reduction, and Beach Cleanups

The Yang-Ming Campus' Mentor Course Service Learning Program and the Chiao-Tung Campus' Service Learning Courses all feature activities that are closely connected to environmental protection issues. The Eco Designer Club launches various campus environmental protection activities, including campus plastic reduction campaigns, campus mountain cleanups, flea markets, reusable chopstick rental, and eco-friendly beeswax wrap DIY workshops every semester to advocate for reducing single-use items. The Club also organizes seminars on issues like recycling of leftover food on campus. Each semester, many students participate in beach cleanups and marine waste monitoring in Shimen and Nanliao. These activities, along with seminars held before the beach cleanups, provide proper information about beach cleaning and the marine environment, allowing students to take action and experience first-hand the impact marine waste has on the environment, thereby encouraging them to change their behaviors.

Stewardship

Gifting Duplicate Books to Create a Circular Knowledge Economy

"Protecting teachers and students' right to access educational and research resources" has always been part of the NYCU Library's mission of resource equality. Aside from actively collecting and archiving domestic and foreign academic resour-

ces, the University also attracts donations of brand new or second-hand books from various institutions or members of the public. The library donates any duplicate copies of high-quality books to create a circular knowledge economy, and to make it easier for financially disadvantaged readers to expand their book collections. In addition to the library, NYCU campus book stores also sell used books on consignment, promoting respect for intellectual property rights and increasing the circulation of second-hand course books.

Shared Transport

To encourage the use of shared transport, NYCU has established four YouBike stations across the Chiao-tung Campus since 2017, making it the campus with the highest density of YouBike stations in Taiwan. Two car sharing stations have also been installed at the Yang-Ming Campus. Additionally, the University approved an unmanned electric scooter rental service trial program in 2020, setting up electric scooter bike and e-scooter sharing stations across campus. Promoting the use of shared transport not only saves energy and reduces carbon emissions, it can also encourage the use of public transport and change transportation habits.



57

Publications in SCOPUS

2.3%

Percentage of All Taiwan Publications

Green Consumption

The University practices green procurement, giving priority to recyclable, low-pollution, and resource-efficient products with environmental protection labels, as well as goods and services provided by disability welfare institutions, groups, and shelters to implement eco-friendly sustainable consumption. The University's green procurement ratio for designated projects has exceeded 96% for five consecutive years, even reaching 100% in 2020. In addition to procurement regulations, the University also organizes Earth Day green consumption campaigns to promote environmental protection labels and green consumption.



13

CLIMATE ACTION

Research

"House for All" Complete Concept of the Green

Over the years, the design team at NYCU's Transdisciplinary Design Innovation Shop (TDIS) has received numerous urban designs, innovations, and energy efficiency awards at the Solar Decathlon Europe and Solar Decathlon Middle East competitions for the team's green energy designs. This year, the design team represented Taiwan in international competitions with the project "House for All," which attempts to solve contemporary urban issues like overpopulation, climate crisis, and social isolation. "Because of the pandemic, health and comfortable living spaces are of utmost importance," said TDIS Director David Tseng. "The team not only proposed a healthy and energy-saving architectural space, but also attempted to establish mechanisms for mutual aid in neighborhoods during this time of increased social distancing."

High-Performance Thermoelectric Materials and Green Energy Lab

The "High-Performance Thermoelectric Materials and Green Energy Lab" led by Professor Hsin-Jay Wu, Department of Materials Science and Engineering, focuses on researching green energy development and its applications. The lab is committed to developing high-performance green energy materials to fully recycle and reuse energy. Thermoelectric materials can directly convert dissipated heat energy into electrical energy; therefore, these materials have long lifetimes, high stability, and are small in size, allowing them to have a wide range of applications for waste heat recovery. In the future, these research results can help recover a large amount of waste heat in the environment, drastically slowing the greenhouse effect and energy depletion problems.



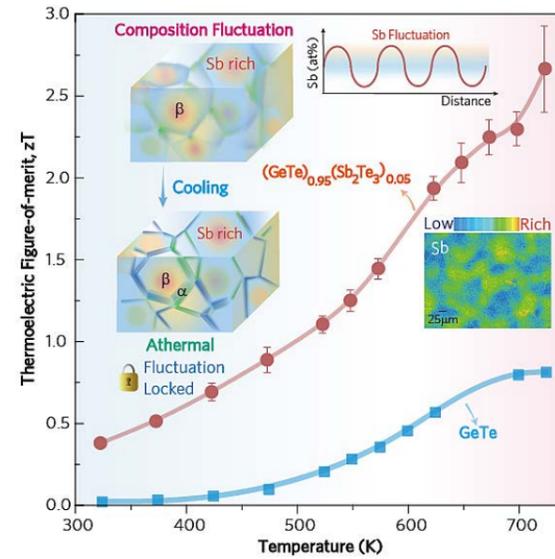

42
Course Units

Social Impact

Founded over 20 years ago, "the Disaster Prevention and Water Environment Research Center" is committed to researching natural disasters and water environment technology, and it has long assisted the government in developing disaster prevention policies, disaster investigation, and post-disaster reconstruction. The Center's latest research project focused on using big data to create a national smart disaster prevention system to facilitate early response to the impacts of climate change. Based on measured water data, the Center analyzed three of Shihmen Reservoir's most pressing issues, namely catchment area collapses, sediment transport, and the

raw water system, providing a reference for future catchment conservation and for improving sediment removal facilities and the water supply.

The Center also promotes the development of green water treatment technology, actively uses renewable energy, and reduces carbon emissions. The Center's research focuses on the integration and application of green water treatment technology, using biological filters to improve the efficiency of organic matter removal from raw water, and develop high-purity polyaluminum chloride (PAC) coagulant to enhance coagulation efficiency to enhance the water treatment and recovery efficiency of water treatment plants.



Student Cultivation

Open Course Related to Climate Change and Sustainable Energy

NYCU invited experts to establish the open course "Responding and Adapting to Climate Change," using the climate change issues Taiwan faces to guide students to discuss natural disasters and how human activity has exacerbated climate change.

The University established the open-course platform "ewant." Colleges and universities across Taiwan can upload and share their general education courses on the platform, allowing the public to enrich their knowledge and achieve lifelong learning. In particular, the "Healthy Planet, Sustainable Future" series of courses introduces students to sustainable issues like "sustainable lifestyle design", "sustainable use of water and material resources", "renewable energy and the climate", and "nature conservation and community-based economics".

Student Club - Eco Designer

The student club "Eco Designer" organizes multiple campus events and environmental protection campaigns to raise awareness about the concept of carbon footprints, waste reduction and recycling, and zero-waste. The club regularly participates in the Taiwan Youth Climate Strike, pushing six urgent demands for climate reform, naming climate change as a national crisis, and proposing the Taiwan version of the "Green Deal" to implement industrial sustainable development and invite all students and faculty members to join the cause of climate reform.

Stewardship

Carbon Management and CO2 Reduction

The NYCU Energy Management Committee formulates plans to save energy and reduce carbon emissions. In 2020, the committee set respective budgets of NT\$13 million and NT\$8.39 million to improve the University's lighting and air conditioning, replacing old T5 lights and air conditioning units that have been in use for more than 10 years. These measures are expected to save 1.43 million kWh of power each year. With 1 kWh of power being roughly equivalent to 0.554 kg of CO2 emissions, this means that the University is expected to reduce CO2 emissions by 792,220 kg annually.


82
Publications in SCOPUS


1502
Students who chose the Course Units



3.5%
Percentage of All Taiwan Publications

14

LIFE BELOW WATER

Research

Research and Development of AI Coastline Topography Change Detection Technology

The NYCU Department of Civil Engineering uses methods like satellite imaging, airborne LIDAR measurements, and UAV photography to conduct coastline topography change analysis. It uses artificial intelligence (AI) technology to improve coastal erosion and land loss issues caused by excessive coastal development, and also promotes the restoration of the natural coastal environment, reduces disasters, and achieves the goal of sustainable coastal development.

Creating an Intelligent Aquatic Garbage Cleanup Vessel to Protect Marine Ecology

As part of NYCU's University Social Responsibility (USR) smart IoT talent training program, the "Autonomous Underwater Vehicle" (AUV) team, composed of students from the Department of Mechanical Engineering, developed the "intelligent aquatic garbage cleanup vessel". They used "Rabboni sensors" as the core component in conjunction with machinery, sensor, solar energy, software, and wireless communication technology, in applying AIoT to marine environmental protection.




27
 Students who chose the Course Units


2
 Course Units

Social Impact

Promoting Marine Conservation Through the Power of Clubs

The Ecology Conservation Club of the NYCU hospital promotes forest and marine conservation and takes action to protect the Earth's environment. Since its inception, the Club has consistently shared marine conservation knowledge on Facebook and promoted plastic reduction, beach cleanups, marine waste art, marine waste removal plans, marine conservation seminars, and family activities. The Club currently has over a hundred active members.



Student Cultivation

Protect the Ocean —Nanliao Beach Cleanup

In collaboration with the Hsinchu-Miaoli-Nantou Youth Volunteer Service Station, NYCU's Service-Learning Center organized a beach cleanup event on November 21, 2020. A total of 52 NYCU students participated in the event at Nanliao Beach. Instead of tongs, students wore reusable gloves to clear a large volume of waste, plastic bags, and plastic bottles, protecting the marine environment through concrete actions.

Service Learning—Beach Cleanup and Marine Waste Monitoring

The Beach Cleanup and Marine Waste Monitoring service learning course teaches students to take actions to protect the marine environment, emphasizing the importance of sorting and analyzing

marine waste after beach cleanups to understand the makeup of marine waste. Data gathered from such analysis can be used as research materials referenced for relevant government policies and solutions, thereby changing human behavior and protecting the ocean.

Stewardship

Plastic Reduction Policies

Starting July 1, 2019, in line with the government's plastic reduction policy, NYCU banned the use of single-use straws and plastic bags on campus, reduced the use of single-use utensils, implemented waste sorting, and made use of recycled PET bottles.



2.3%
 Percentage of All Taiwan Publications




30
 Publications in SCOPUS

15

LIFE ON LAND

Research

AgriTalk Smart Agriculture System - Using IoT Technology to Provide the Optimal Farming Environment

"AgriTalk" is a smart agriculture system developed by NYCU with core technologies from the biotechnology team led by Professor, Wen-Liang Chen of the Department of Bioscience and Technology and the IoT team led by Professor, Yi-Bing Lin from the Department of Computer Science. With strong support from Quanta Computer and Chunghwa Telecom, the "AgriTalk technology" has been commercialized for sustainable operation. Through the cultivation from "the Ministry of Science and Technology's Industrial Value Creation Program," the smart agriculture technology startup AgriTalk has been established. The "AgriTalk" smart agriculture system combines IoT farm monitoring systems, AI for agriculture, and biologics research and development. In particular, AI for agriculture includes three systems for predicting soil microbiomes and fertility, as well as disease and pests. The "AgriTalk" platform allows effective management of farmlands and quality control of crops. Using an AI system to provide farm management suggestions for early intervention as well as the research and development of corresponding biologics, the platform provides early warnings as well as friendly solutions, creating a comprehensive pesticide-free technology farming system.

NUE: Nitrogen Use Efficiency - Identifying the First Nitrate Transporter Gene in Plants

Yi-Fang, Tsay, adjunct professor of NYCU's Department of Life Sciences and Institute of Genome Sciences, indicated that nitrogen is the most important factor affecting crop production. Nitrogen fertilizer production consumes 1-2% of global energy usage. However, only 30-50% of the nitrogen fertilizer applied are utilized by plants. The remainder can pollute water sources and lead to the production of greenhouse gases. Yi-Fang Tsay's research team discovered that plants can detect nitrate concentrations to regulate their own development, growth, and gene expression. CHL1 is a dual-affinity nitrate transporter responsible for transporting nitrate from outside the cell to inside the cell. A high external concentration of nitrate triggers the "low-affinity" system, in which the CHL1 transporter absorbs and stores large volumes of nitrate for later use. A low concentration of nitrate, caused by factors like rainfall, triggers the "high-affinity" system, where CHL1 absorbs every bit of residual nitrate. Therefore, improving the nitrogen use efficiency of crops is the top priority for developing sustainable agriculture. In addition to applying the NRT1 gene to improve the nitrogen use efficiency of crops, different strains from various ecological environments are also used to find related genes that can affect nitrogen use efficiency.

15 LIFE ON LAND



229

Students who chose the Course Units



5

Course Units

1.7%

Percentage of All Taiwan Publications

Social Impact

DIYGreen Circular Farm

To help resolve three major environmental problems in Taiwan, namely the heat island effect, excessive recycled bottles and the low processing rate of kitchen waste, Professor, Jehng-Jung Kao from the NYCU Institute of Environmental Engineering developed "DIYGreen" technology, designing a new DIY green rooftop garden built with a base of recycled bottles that will allow people to easily plant fruits and vegetables. To promote "DIYGreen," the research team further designed the DIYGreen kit, which has a short construction time, is easy to maintain, and can be expanded flexibly to suit different needs, allowing people to plant their own fruits and vegetables from

the comfort of their balcony or rooftop. The kit conserves water and works on any flat surface, such as a balcony. The design, which combines environmental protection, food safety, and ecosystems, has garnered interest from schools at all levels, communities, and tech companies. According to Professor Jehng-Jung Kao, the team is currently collaborating with 30 schools. Teachers who are interested in the kit are welcome to make inquiries, he said, as the team has raised enough funds this year to launch a teacher's program that will support 200 teachers from across Taiwan to incorporate the "DIYGreen kit" in their classes. Additionally, Professor Kao also led NYCU students to create green rooftop gardens in service learning courses, allowing students to fully experience the joy of growing vegetables.

Re-Emergence of the Formosan Flying Fox! Research confirms the existence of a population of Formosan flying foxes, once thought to be extinct on the main island, in Hualien.

A joint research team led by Assistant Professor, Wen-Ya Ko from NYCU's Department of Life Sciences and Institute of Genome Sciences and Dr. Shiang-Fan, Chen from National Taipei University participated in the "National Ecology Green Network Establishment Project". They also worked with the Council of Agriculture's Endemic Species Research Institute and the Bat Association of Taiwan to establish the "Formosan Flying Fox Conservation Strategy Development and Promotion Team". After over a year of research, the team identified three known habitats of the Formosan flying fox. In addition to the populations on the offshore Guishan Island and Green Island, there is also a colony in Hualien County. The total population of Formosan flying foxes falls somewhere between 78 and 205. Based on the habits of the Orii's flying fox on Ryukyu Island, the research team concluded that the population of Formosan flying foxes in Hualien likely live in the mountains and forests around Hualien City during the day and, based on the fruit available from flowering trees, come to rest on roadside trees in the city when they feed at night. Flying foxes play an important role in the ecosystem as they contribute to the dissemination and pollination of plant seeds. Seeds excreted from the digestive tracts of flying foxes have a higher germination rate and shorter germination time than undigested seeds. Therefore, a decrease in the flying fox population will inevitably affect forest expansion, maintenance, and renewal.



Student Cultivation

A Different Kind of Service-Learning - Ecological Conservation at Datun Nature Park

Assistant Professor Fen-Hwa Wong and Assistant Professor, Sheng-Hui Lan from NYCU's Department of Life Sciences and Institute of Genome Sciences offer a service-learning course for students of the Department of Life Sciences and general sophomore students. However,

this course takes a different approach from the typical beach cleanups, picking up cigarette butts, or community service. Instead, the course features a series of insect and plant-related seminars and field trips, allowing students to take a break from their heavy course loads and spend time in nature. Led by Assistant Professor, Fen-Hwa Wong and Assistant Professor Sheng-Hui Lan, students experience ecological conservation first-hand at the Datun Nature Park at Yangmingshan. In recent years, Brazilian spiderwort has been found growing near the Datun Trail of Yangmingshan National Park. Originally introduced to Taiwan from South America as a garden plant, the Brazilian spiderwort has become an invasive species that the National Park Administration is asking for volunteers to help remove. Invasive species invade the habitat of indigenous species, and may even cause their extinction. If not removed completely, even a single section of stem or root can grow quickly, so it is important to remove them as thoroughly as possible. The service learning course not only protects the indigenous species at Yangmingshan National Park from an invasive species but also offers students the ability to put the knowledge they learned into practice.



18

Publications in SCOPUS

Stewardship

NYCU Eco Designer

The academic student club "Eco Designer" was founded to bring the Maker spirit and environmental awareness to the campus and provide a platform for students of different departments to collaborate, exchange ideas, and expand their network. The club organizes various events every semester, including: 1) Implementing product design and concept promotion projects, 2) discussing environmental protection issues, 3) lectures and seminars by guest speakers, and 4) mountain and beach cleanups. For example, the club organized a talk about "the food waste issue" in May 2020, which stated how the food waste Taiwan generates in a year is enough to fill 74 Taipei 101 buildings. Of these 3.4 million tons of food waste, about 40% comes from up-stream production, storage, and processing. In other words, down-stream retail and consumers account for over 60% of food waste. From this, it is clear that modern retail and convenient, instant-gratification services are indirectly responsible for such an outcome. But how can individuals contribute to bring change in society? By promoting the club and fostering solidarity between members, the club hopes to encourage and allow more students to take part in environmental protection activities, raise awareness about environmental protection, and take action.

16

PEACE, JUSTICE AND STRONG INSTITUTIONS

Research

Adjustments to Taiwan's Legal System Under the Solidarity Against the Pandemic Movement

The "Human Rights and Rule of Law Research Team of the Research Center for Epidemic Prevention", composed of NYCU's School of Law and the Institute of Public Health, published research results in Issue 312 of The Taiwan Law Review. From the perspectives of human rights law, resource allocation, and a comparison with the United States' legal system, the issue led readers to think about certain topics: The unprecedented emergence of Taiwan's solidarity against the COVID-19 pandemic. Specific points addressed include the question of how we can ensure that community values are not that of "the strong bullying the weak", and that unity does not benefit the elite autocracy and technological hegemony, as well as the importance of adhering to the spirit of human rights and the rule of law. Therefore, the three articles within this issue bring new perspectives to local industry, government, and academia, and discuss the insights that COVID-19 has brought regarding Taiwan's epidemic prevention policies and laws.




99
Course Units


4186
Students who chose the Course Units

Social Impact

Protecting Whistleblowers and Labor Rights

The "Research Center for Financial Regulation and Corporate Governance" of NYCU's School of Law is committed to promoting various human rights and justice-related campaigns. The Center's director, Professor, Chih-Chieh Lin, is one of the architects of Taiwan's "Public Interest Whistleblower Protection Act", drafting the bill from scratch to help complete Taiwan's laws regarding whistleblowers. The bill emphasizes the importance of whistleblowing in preventing major harm against public welfare and its positive significance in strengthening corporate

governance. The law thus protects the whistleblower's identity, personal safety, and job security. The NYCU School of Law also organized a series of seminars on labor rights, thereby raising labor rights awareness, promoting labor rights protection, and working with the NYCU International Institute for Cultural Studies to focus on the labor rights of migrant workers and provide suggestions for relevant policies and regulations.



Preparedness of Rule of Law and Human Rights Protection During COVID-19

Taiwan has been lauded around the world for its use of technology to combat the first wave of the COVID-19 pandemic. The Quarantine System for Entry at airports serves as the first line of defense. After that, the National Health Insurance database is used to inform healthcare workers of people's individual travel history, which not only allows healthcare workers to be more vigilant but also enhances doctors' ability to determine an individual's possible risk of infection. The Digital Fence System that the government developed in collaboration with telecommunication companies to monitor quarantined people has also received international attention. However, behind the success in dealing with the pandemic, the collection and use of personal data is a concern that needs to be addressed. There will inevitably be a new wave of legal debates on how the government should balance information monitoring and privacy in the post-pandemic era. In response to the pandemic, the NYCU School of Law organized the "Preparedness of Rule of Law and Human Rights Protection During COVID-19 Roundtable", inviting experts from different disciplines to discuss issues such as disaster prevention gover-

nance, digital governance, resource allocation, and social solidarity in hopes that relevant policy discussions will provide a reference for legality.

National Health Insurance Reform

The sustainable operation of Taiwan's "National Health Insurance" has always been a topic of concern across various fields. Following the "Health Insurance Limitation Symposium", a seminar titled "Health Insurance Reform Under the Pandemic – An Intergenerational Dialogue" was held by the "NYCU Research Center" for Epidemic Prevention in collaboration with the Taiwan Society of Health Economics and the Taiwan Economic Association. Scholars, experts, medical professionals, and consumer representatives from different generations were invited to speak. It was the hope that this gathering of the government, corporate, medical, and academic sectors would facilitate dialog between generations that would highlight more diverse opinions and viewpoints regarding how the "National Health Insurance" should be reformed and the changes that need to be made in response to the COVID-19 pandemic. The seminar covered four major topics, namely "copayment and reducing waste", "balance billing and private insurance", "reasonable growth of medical expenses and adjustment of health insurance rates", and "generational dialog regarding health insurance reform". "National Health Insurance" reform is not just a matter affecting institutions but also intergenerational equity.





Student Cultivation

Government-Financed Medical Education

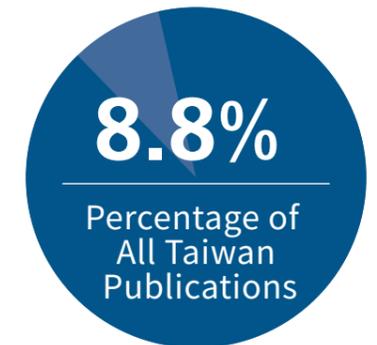
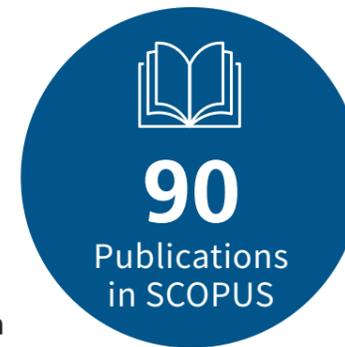
The NYCU School of Medicine signed an MOU with the Hospital and Social Welfare Organizations Administration Commission of the Ministry of Health and Welfare. Going forward, the two parties will work together to plan a comprehensive system regarding the university education, residency training, future service in rural communities, and on-the-job training of government-financed medical students, hoping to make considerable contributions towards promoting the sustainable operation of Taiwan's government-financed physician system.

Free Legal Consultation

Students of NYCU School of Law worked together with pro bono legal counsels of the "Hsinchu Branch of the Legal Aid Foundation" to establish the NYCU Legal Clinic, providing professional legal consultation for NTHU and NYCU students and faculty as well as practical litigation learning opportunities for NYCU law students.

"Yang-Ming Crusade" Human Rights Education Camp

Founded over 40 years ago, the "Yang-Ming Crusade" is a volunteer group consisting of mainly medical students who visit remote rural areas to volunteer their services during the summer and winter holidays. The group, which fulfills both humanistic education and social responsibilities, is currently the largest student based club on the Yang-Ming Campus and is subdivided into teams, including the community medicine/Yilan team, the "Humanity-Medicine Camp," the "Human Rights Education Camp," and the "Psychiatric Service Team." In particular, the "Human Rights Education Camp" disbanded in the summer of 2019 after completing its 21 years long scheduled milestone. With the tenet that "care for human rights is rooted in respect for human dignity and care for others", the team organized human rights education camps for junior high school students, instilling human rights concepts such as the right to life, equality, and liberty, as well as the inherent "respect" and "tolerance" behind these concepts.



Stewardship

Friendly Campus Information Network

NYCU established the "Friendly Campus Information Network" to create a safe, cozy, and suitable learning environment. To construct a healthy, harmonious, and friendly campus atmosphere, NYCU strengthens its outreach to at-risk students to protect them from substance abuse, campus violence and bullying, and involvement in harmful organizations. With the goal of preventing bullying on campus, substance abuse, drug use, and harmful organizations, the network provides a compilation of relevant information and organizes weekly friendly campus events that incorporate transit safety, campus safety, housing rental safety, campus disaster prevention, moral education, legal education, and tobacco hazards prevention, combining various educational campaigns and events to draw attention to the importance of establishing a friendly campus environment.

17

PARTNERSHIPS FOR THE GOALS

Research

From 2011 to 2020, NYCU published 11623 international articles, 3505 (30%) of which are associated with at least 1 SDG.

Disaster Prevention and Water Environment Research Platform

The "Disaster Prevention and Water Environment Research Center" established the "Disaster Prevention and Water Environment Research Platform". The Center also trains professional talent, helps the government conduct disaster prevention policy planning and execution, and conducts post-disaster investigation and subsequent reconstruction work. The Center's research covers fields like soil and water, water environment technology, automatic disaster prevention monitoring information systems, and industry disaster prevention. For years, the Center has supported the research requirements of relevant government agencies (e.g. the "MOEA's Water Resources Agency," Ministry of the Interior, Ministry of Transportation and Communications, Taiwan Water Corporation, Environmental Protection Administration, Council of Agriculture, etc.) and strived to execute research plans, thus committing to implementing the application and social service aspect of the research. Also, the Center established international collaboration with the "Dutch research institute Deltares." The collaboration involves conducting FBG sensor experiments in the Netherlands as well as an international construction project on "Singapore's Julong Island." The Center integrated the flow simulation model it developed with "Deltares' Flood Early Warning System" (FEWS). Going forward, this system can be used in countries with similar rainfall patterns and topography to provide urban flood warnings as well as early warnings of embankment damage and slope collapse.

One Health and Epidemic Prevention Research

NYCU is the first university in Taiwan to promote the concept of "One Health", leading six universities in Taiwan to establish the Taiwan One Health University Network (TAOHUN). At the same time, the University also joined the Southeast Asia One Health University Network (SEAOHUN), helping the government improve Taiwan's ability to handle the threat of public health incidents and forming close connections with Taiwan's diplomatic allies in Southeast Asia on epidemic prevention strategies. NYCU established the "Research Center for Epidemic Prevention" to understand the pathology of COVID-19, develop cellular immunotherapy, and explore the impact of the COVID-19 pandemic on human culture and society. The Center also established an international epidemic prevention network, organizing multiple open forums in 2020 that invited scholars from around the world to discuss COVID-19 prevention strategies from medical and legal perspectives. For example, in "the Joint International Tropical Medicine Meeting" (JITMM), the Center hosted an academic forum entitled "Tropical Disease Control amid the COVID-19 Pandemic" to show scholars around the world the strategies Taiwan adopted to control the COVID-19 epidemic. Additionally, the Center reviewed policies on drug R&D and patents, information monitoring, as well as quarantine and travel restrictions on the Preparedness of Rule of Law and Human Rights Protection During COVID-19 Roundtable and NYCU School of Law Academic Forum. The research



center is also committed to establishing international collaborations, participating in public health and epidemic prevention organizations, promoting epidemic prevention-related research projects, and establishing Southeast Asia regional joint protection measures with countries such as Thailand and Vietnam.

Healthy Communities in Outlying Islands

NYCU's Community Medicine Research Center has collaborated with the Ministry of Health and Welfare for 15 consecutive years (2007-2021) to implement its "Healthy Communities in Outlying Islands" project. In total, the center has provided guidance to 23 offices across Kinmen County, Penghu County, and Lianjiang County. The project is addressing three major common topics: (1) Community prevention and treatment of tuberculosis, (2) promotion of healthy aging at home, and (3) immigrant outreach. The Center established the "Health and

Human Rights Education Website", an informative website with comprehensive information on a wide variety of health issues, including risk factors for common mental and physical illnesses such as "healthy Body Mass Index (BMI)" and "sleep health"; mental and physical illnesses that can cause serious disability, such as "emotional health" and "eye health"; the government's key disease prevention targets, such as "smoking cessation" and "tuberculosis prevention"; as well as emerging diseases such as "Internet addiction". The Health and Human Rights Education Website also provides detection functions for various health issues, supplemented by comprehensive health education services in hopes of implementing preventative healthcare in everyday life to better the mental and physical health of the public.

Transnational Research Exploring Biodiversity and Diseases

NYCU's professors from the College of Biological Science and Technology collaborated with scholars from China, Japan, and Europe to collect and analyze data, looking into the evolution and life history of the stone moroko fish (*Pseudorasbora parva*) and how climate change has affected its numbers. NYCU also implemented Taiwan CDC's bilateral research project "Epidemiology and molecular epidemiology of protozoan infection in Taiwan" with "Japan's National Institute of Infectious Diseases," collecting relevant data for further research. Additionally, Associate Professor, Hsin-Jen Chen and his students collaborated with hospitals in India to learn about the nutrition, dietary preferences, and behaviors of Muslims with diabetes during Ramadan in order to improve their health conditions.

Social Impact

Promoting Information Education in Remote Rural Communities

"NYCU's Jullay International Volunteer Team" to India has long provided volunteer services at the Jamyang School, a boarding school located in the foothills of the Himalayas in Ladakh, India that provides free education for economically disadvantaged students. Since 2010, the Jullay International Volunteer Team to India has traveled to Jamyang School during the summer to provide educational services, gradually helping Jamyang School develop digital learning resources that will allow students to learn on their own, using the convenience and richness of digital technology to alleviate some of the problems of education inequity. The team also continues to plan and promote online sponsorship programs digitally and will collaborate with the "Formosa Budding Hope Association" to find sponsors that will allow the children to further their education so that they can change their future and give back to the community.

Helping People with Technology and Promoting Science and Programming Education

Based on years of volunteer teaching experience, the University's Department of Electrophysics and Department of Applied Chemistry worked together to develop the "Fun with Chemistry" teaching aid for the teachers and students of Hsinchu County's Guangming Elementary School, "Hsing Lung Elementary School," and "Shih Hsing Elementary School." Aside from promoting programming concepts with easy-to-grasp board games, students from the Department of Electrical and Computer Engineering also worked with the "Boyo Social Welfare Foundation" and the Taiwan Fund for Children and Families to actively promote programming science learning experiences through Lego EV3 robots. The students held

a series of Lego robot workshops for disadvantaged children who otherwise may not have the resources or opportunity to play with Lego robots. In these workshops, the children learn to build Lego robots from scratch, working with the university students to exercise their creativity and write programs to create robots of their own.

University Social Responsibility Project - Tribal Star Incubation

NYCU's social responsibility project "Tribal Star Incubation: Intelligent Health for Remote Areas" collaborates with non-governmental groups such as the Rotary Club of Taipei Fu-Jung, the Rotary Club of Taipei Sun Young, and the Taiwan Atayal Language and Culture Research and Development Association, connecting local resources and medical teams in Nan'ao and Yilan to establish partnerships of diversity and mutual learning, thereby integrating indigenous wisdom and digital healthcare technology to address the healthcare needs of rural areas.



Global Humanities Institute

Sponsored by the Higher Education SPROUT Project through the Ministry of Education, the International Institute for Cultural Studies (ICCS) launched the 5-year project "Conflict, Justice, and Decolonization: Critical Studies in Inter-Asian Societies" (2018-2022). With the






2988
 Students who
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Student Cultivation

Promoting Remote Higher Education Courses in Collaboration with the Association of East Asian Research Universities

As a member of the Association of East Asian Research Universities (AEARU), NYCU hosted the "2020 AEARU Innovation & Entrepreneurship Winter Program" in collaboration with National Taiwan University's Office of International Affairs. The program was attended by 48 students from 20 top universities across 8 different countries. Seeing as the COVID-19 pandemic made it hard to promote international higher education, NYCU and the AEARU Secretariat worked together to develop the Global Learning Initiatives Program, offering professional courses taught in English for students from 19 member universities. Four colleges in NYCU (the College of Electrical and Computer Engineering, International College of Semiconductor Technology, College of Hakka Studies, and the School of Law) offered 7 remote learning courses taught in English, the highest number of courses offered by any member university. These courses attracted 57 students from member universities. Additionally, because students are unable to travel abroad due to the pandemic, NYCU worked with sister schools abroad to offer students more international experiences, encouraging students to take online short-term elected courses and dual-degree programs offered by these sister schools and conducting international exchanges with top sister schools to increase opportunities for interdisciplinary learning.

research goal of promoting equality, justice, and peace, ICCS established partnerships with 12 international academic institutions, forming a research team of 36 experienced researchers and 24 young scholars from around the world to engage in discussions and establish the "Global Humanities Institute", focusing on the theme of "migration, logistics, and inequalities of the current global context". The "Global Humanities Institute" received grants from the Consortium of Humanities Centers and Institutes and the Mellon Foundation. Its goal is to combine the research of interdisciplinary scholars to discuss how different societies develop exclusionary, discriminatory, oppressive, and violent ideologies, laws, and institutions, focusing on the social conflicts and inequalities in third-world countries and in particular the mass migration of refugees, mobile laborers, stateless persons, and human trafficking victims. Through exchanges with scholars and transnational NGOs, the institute also thinks about how to propose more inclusive discourse and amend inappropriate laws and policy proposals. Plans for the "Global Humanities Institute" not only involve suggested reading materials for scholars around the world but also monthly online forums with NGOs. Through discussions and sharing research the institute hopes to help scholars and students from around the world enrich one another's research outcomes.

Erasmus+ Youth Talent Education Program

In 2014, the EU launched the "Erasmus+ Youth Talent Education Program," which was implemented until 2020. The program encourages member countries to work with partner countries to promote personal learning mobility, innovation, and policy innovation support, etc. Since 2015, NYCU sister schools in Europe have invited NYCU to apply for the Erasmus+ project as a partner school. Collaborations between partner schools include exchange programs for teachers, students, and employees. Over the years, NYCU has worked with Poland's Cracow University of Economics and Turkey's Koç University, Maria Curie-Skłodowska University, Norway's University of Agder, France's University of Bordeaux, and Belgium's Hasselt University. To date, 6 faculty members, 11 students, and 3 staff members have participated in international exchanges facilitated by the program, generating meaningful and mutually beneficial interactions in terms of academic affairs, school administration, and professional fields.

Cultivating Global Health Leaders

Since it was established in 2003, the NYCU International Health Program has trained a number of health officials and decision-makers around the world. Working with the International Cooperation and Development Fund, the International Health Program established a national health system program that provides online classes for students in Taiwan's ally countries in addition to sharing Taiwan's successful epidemic prevention experiences during the pandemic. During the pandemic, Ph.D. student Mduduzi Colani Shongwe from the African country Eswatini collaborated on a large-scale transnational study with NYCU professor Sung-Li Huang to investigate the mental health and willingness to get vaccinated among the general public and frontline health workers in Eswatini.

Sixth Fuel USR Courses

A team led by Professor Wen-Shu Lai launched the Hsinchu Living Museum Project to promote environmental and ecological education and introduce the public to military village culture and the Hsinchu Sixth Fuel Factory, a WWII historical and cultural heritage site. The team has organized 13 promotional campaigns and courses, showing residents and students the ecological and cultural significance of the Hsinchu Sixth Fuel Factory to protect the sustainable development of the local culture.



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International
Co-Authored
SDG-Related Papers

跨國合作研究團隊



Interntional Partnerships

NYCU is committed to collaborating with local government agencies as well as universities and research institutes from around the world to achieve the Sustainable Development Goals. In 2018, the Chiao-Tung Campus and TAISE signed the Letter of Intent on Sustainable Development Cooperation. The University also worked with multiple other government agencies and international institutions:

- In collaboration with the Sayling Wen Cultural & Educational Foundation, NYCU established the University Alliance in Talent Education Development (UAiTED) to cultivate future industry-academia talent worldwide.
- As a member of AEARU, NYCU helped to develop an online classroom program so that students and teachers worldwide can learn together in diverse ways.
- NYCU also founded the Global Citizenship Education Center, encouraging scholars in Taiwan to participate in UNESCO events.
- Working with 11 academic institutions across 7 countries, NYCU founded the Consortium of Global Hakka Studies to pass on Hakka cultural experiences and encourage interactions and sharing in the international academic community.
- NYCU was also commissioned by the Ministry of Economic Affairs (MOEA) Water Resources Agency to plan and manage the "Nanliao Water Resource Startup Hub" to help promote the development of emerging water resources.
- NYCU helped the government encourage medical institutions to apply for smoking cessation services to improve the quality of smoking cessation treatment services and provide a reference for tobacco hazard prevention policies.

- The Ministry of Health and Welfare's Department of Mental and Oral Health commissioned NYCU to conduct quality management and effectiveness assessment of the "Integrated Drug-Addiction Treatment Model Pilot Project".
- NYCU was commissioned by the New Taipei City Water Resources Department to implement the "Smart River Planning and Smart Flood Prevention Platform Construction Plan".
- Working with TSMC, the University founded the TSMC x NCTU Energy Education Center, a high-quality learning environment in a sustainable building that provides lifelong learning opportunities for all.
- NYCU was also commissioned by the Hsinchu City Cultural Affairs Bureau to host its "Home Under the Big Chimney" neighborhood outreach and residency project.
- With the Community Angel and Yang-Ming Crusade volunteer groups, the Yilan City Office, village chiefs across Yilan City, and the chairmen of community development associations, the National Yang Ming Chiao Tung University Hospital conducts full interviews and assessments of senior citizens over the age of 65 in Yilan, providing care and necessary support for senior citizens with urgent needs.
- As part of the Ministry of Education's Aesthetics and Design Curriculum Innovation Plan, the University promotes aesthetic education and teacher empowerment training to improve the public's aesthetic literacy.



Members of AEARU