# **Circular Economy and New Agriculture Integrated R&D Elite Talent Course in Nanhua University, Taiwan**

Admission website: <https://sahshashi644.wixsite.com/website-1>

Admission Deadline: January 20, 2021

# **Condition and Requirement**

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| Item | Explanation |
| Important Link | Nanhua University: <http://en.nhu.edu.tw>  Department website: <http://gts.nhu.edu.tw/?locale=en> |
| Nationality  Requirement | Non-Taiwanese students who have not been studied in Taiwan before. |
| Couse  Details | * Admission ends on January 20, 2021. * Semester Starting from 2021/2/14. * 25-30 Seats Available. * Course Name: Master program of Green Technology For Sustainability * Duration of course: Minimum 1.5 Years |
| Admission Requirements | * Minimum Bachelor’s degree from recognized Institute with major of Civil Engineering, Agriculture, Computer science, and so on. * Students must have an interest in learning regarding environments and agriculture. |
| Admission Procedure | 1. Fill Nanhua University Application form. (Form can be downloaded from Apply now section and any doubts during submission of the application can be asked through email on (10880015@nhu.edu.tw) 2. Submit the filled Application form(<https://forms.gle/Q7k1DmeZS4HabeGY7>) along with necessary details and documents required(Passport, Latest Degree Certificate, Identity Proof). 3. The college of science and technology and the Department of International Affairs will review the submitted application form and take an interview if necessary. 4. Your acceptance in the university will be informed through email by Acceptance letter along with a scholarship letter and Registration survey. Registration survey will be for your consent to accept the scholarship offer and will complete the registration on time. |
| Scholarship Details | * **For Indian Students** * For every student, Full Tuition fees are waived off for 2 years. * In the first semester, students will be awarded NT. 5,000 as a research assistant scholarship every month, providing a total of NT. 20,000 for 4 months. Students need to stay in school for R&D. from Monday to Friday. * After completing the student residence visa and work permit, the student can do part-time work inside or outside the campus for 20 hours per week during the semester and can go to the company for full-time internship work during the winter and summer vacations. Department will help to introduce the work opportunities. * Students with good academic performance will receive an R&D chance after the first semester, accounting for 30~50% of all students, NT.4500 to NT.12000 per month. * **For Other country Students** * For every student, Full Tuition fees are waived off for the first semester. * In the first semester, students will be awarded NT. 10,000 as a research assistant scholarship every month, providing a total of NT. 50,000 for 5 months. Awarded students need to stay in school for R&D. from Monday to Friday, with a limit of 10 students. * From the second semester onwards The top 30% scorer in the semester in a class will get full tuition fees waived off. (If 10 students are present in a class then the top 3 rank holder will get the scholarship of full tuition fee waived off) * After completing the student residence visa and work permit, the student can do part-time work inside or outside the campus for 20 hours per week during the semester and can go to the company for full-time internship work during the winter and summer vacations. Department will help to introduce the work opportunities. * Students with good academic performance will receive an R&D chance after the first semester, accounting for 30~50% of all students, NT.4500 to NT.12000 per month. |
| Fee Structure | * Dormitory fee (Approx. 400-500 USD)/Semester * National Medical Insurance( Mandatory for every Foreigner)- Approx 160 USD/Semester * Tuition fee(From second semester)- 1300-1400 USD/Semester (Not to pay by Top 30% Rank Holder and Indian Students) * Miscellaneous fee- Approx 50 USD/ Semester |
| Extra Benefits | * Free Chinese class will be provided to every student which will help the student to learn Chinese speaking, reading, and writing, which is very much necessary to get a job in Taiwan * Industrial visits in reputed companies in Taiwan once or twice in a year * Students will be introduced with the different company for Full-time Internship according to their interest and according to the performance in the internship student can be awarded a full-time job in the company * Full-time support from the International Affairs office for any problem regarding your stay in Taiwan and your doubts. |
| Course Contents | Shown in Table 1 |
| Teacher Planning | Shown in Table 2 |
| Passing Criteria | In addition to completing the thesis, the graduation conditions of the graduate students of this course must complete the compulsory subjects of this course, and the total graduation score must reach 30 credits including 4 credits for master thesis. |
| Student Counselling Program | 1. Appropriate international mechanisms for student counselling and related approaches with Nanhua University. Such as: the implementation of the guidance of foreign students at Nanhua University; the standard operating procedures for handling special incidents of foreign students; the standard operating procedures for assisting foreign students in handling various activities. 2. After the pass of 9 credits in Chinese language class  and the completion of master thesis draft, student can apply the R&D internships for the connection of job opportunities. |
| Enrollment quota | Circular economy:  (1) Construction Waste Recycling, spatial information, and slope disaster prevention warning (7~9 persons)  (2) Recycling of black solider flies, health science, environmental testing and other circular agriculture. (7 ~ 9 persons)  2. New Agriculture: Orchid cultivation, organic agriculture, biological control (7 ~ 9 persons)  3. Information Technology: Internet of Things, big data analysis  (5 ~ 7 persons) |

# **Course planning**

To accelerate the transformation and upgrading of Taiwan’s industries, the Taiwan government has created a new economic model that takes “innovation, employment, and distribution” as its core value, pursues sustainable development, and stimulates industrial innovation through the three strategies of “connecting the future, connecting the world, and connecting the ground”. Spirit and energy. The government proposes 5+2 industry innovation plans such as "Smart machinery", "Asian Silicon Valley", "Green Energy ", "Bio-medicine ", "National Defense", "New agriculture" and "Circular economy" as the driving force The core of Taiwan’s next-generation industrial growth injects new momentum into economic growth (National Development Committee, 2020). For the circular economy, the Environmental Protection Department of the Executive Yuan has developed a "Resource Recovery and Reuse Promotion Plan", hoping to properly use waste resources in various stages of material production, consumption, waste, and regeneration to replace natural resources exploitation and achieve material Full cycle, zero-waste vision. In the new agricultural sector, Taiwan has passed the Organic Agriculture Law, focusing on biological control rather than conventional agricultural laws, and actively improving the international competitiveness of the country’s agricultural products through the cold chain system.

Therefore, to strengthen technological R&D and innovation after combine with industry and cultivate elites, this special class integrates circular economy and new agriculture with the following characteristics:

## **Course features**

### **Circular economy: use construction waste to create the permeable pavement**

Climate change leads to extreme climate and extreme rainfall, so increasing surface permeability and increasing infiltration is a top priority. This set of courses consists of professors with academic expertise and professional laboratories to set up courses on the construction of a waste recycling economy, and then research and develop for permeable pavement. Increase infiltration can be applied to landscape walkways or driveways in the garden, and provide a cultivation process.

### **(b) Recycling economy: Black soldier Fly Recycling Agriculture**

Food waste, pig farming, and chicken farming cause air and water pollution in cities and rural areas. Decontamination can be avoided by black soldier flies. Besides, organic fertilizer, organic soil, and chitin are produced in the process. Industrial cooperation on patents and practical experience, through industry professionals with practical experience, and professors with specialized expertise, jointly develop relevant technologies and products.

### **(c) New agriculture: orchid cultivation techniques**

This class lead by General Manager Lai Benzhi of Taida Horticultura to establish standard operating procedures for the cultivation and management of three Phalaenopsis species, including Oncidium, Phalaenopsis, and Gardella, to cultivate professional cultivation techniques for the promotion of employees of the Indian branch of Nongyou Seed Co., Ltd.

### **(d) Academic training, experiment, and course internship**

This special class cooperates with academic training courses, including the knowledge of sustainability such as climate change, sustainable agriculture, organic agriculture, biological control, professional Internet of Things (IoT) technology, telemetry and geographic information technology, data analysis, and exploration, and R& D capabilities, etc.

### **(e) Internship in Green Technology for Sustainability**

Students can get the opportunity to join this special class in the last semester of their Master's program. The student will get the opportunity to join the industry for research and development as a trainee internship. Students can also be paid as per the industry norms and regulations for trainee internship. Some other basic requirements for this course are as follows:

a. Students must take 9 credits in the first three semesters of Chinese language to learn to communicate with industry in Chinese. Which also helps the student to communicate with other local people in Taiwan.

b. Students must complete the draft of the master's thesis to have special field expertise. Publication of one academic conference paper is also necessary.

Students who have completed training and have independent research capabilities will be stationed in the industry for three to four months for cooperative research and development internships. The partners include cooperative companies such as Taida Horticultura, Yaoji Industrial Co., Ltd., Guitian Laboratory, Jiezhou Information Co., Ltd., and Taiwan Sugar Company's Biotechnology Division, Yimi Community-University Farm, etc. After the end of the internship period, based on the performance of students and the requirement of the company, students can be retained as a full-time employee or sent to the industry's overseas company services.

## **Course Name and Weightage**

### **(a) Course description**

At least 30 credits must be completed to graduates from this course, including 6 credits for majors, 20 credits for electives, and 4 credits for Master Thesis. Also, 9 credits are required for Chinese Class, which is not included in the graduation credits.

(a) " Symposium " course: This is a compulsory course for master's degree students in this department. Only the total credits of the “Symposium” admits 4 credits.

(b) Before graduating students must have more than two papers published in an academic seminar and submitted to an international journal. Only the application for oral defense for a Master's degree can be submitted. All published content and topics must be related to the master thesis.

(c) "Circular Economy" or "New Agriculture" can major in one field, and at least one subject is required for “Frontier Data Analysis”.

(d) Credits for internships in Green Technology for Sustainability are not included in the calculation of graduation credits. Students must complete the draft of the master's thesis to have special field expertise, and pass the course meeting before they can continue the Internship.

### **(b) Compulsory subjects: 6 credits**

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| Subject name (credit score) | Subject name (credit score) |
| Symposium I, II, III, IV (4) | Climate Change (2) |

Remarks: Compulsory Chinese Language: 9 credits in the third semester, which is not included in the graduation credits.

### **(c) Elective subjects: at least 20 credits are required, excluding 6 credits for a sustainable green technology internship**

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| **Field**  **(Credit score)** | **Subject name (credit score)** | **Subject name (credit score)** |
| **Circular Economy(22 Credit)** | Global Warning and Design of Green Environment (3) | Construction Waste Recycling Process and Practice |
| Breeding Practice of Black Soldier Fly(3) | Physical properties and test of recycled pellets(2) |
| Application Practice of Black Soldier Fly(3) | Proportion and Practice of Permeable Concrete(2) |
| Circular Agriculture Practice(3) | Compression and Permeability Test of Permeable Concrete(2) |
| Experiment of Permeable Pavement(2) |  |
| **New Agriculture**  **(25 Credit)** | Environmental Change and Agricultural Development(3) | Oncidium Cultivation Management and Practice(3) |
| Technologies for Sustainable Agriculture(3) | Phalaenopsis Cultivation Management and Practice(3) |
| Environmental Health Sciences(2) | Cattleya Cultivation Management and Practice(3) |
| Organic Agriculture and Practice I,II (4) | Biological Control and Practice I, II (4) |
| **Frontier Data Analysis**  **(24 Credit)** | Environmental Planning Geoinformatics applications (3) | Environmental Risk Assessment and Management(3) |
| Finite Element Method (3) | Analysis of Biological Environmental system(3) |
| Data Mining(3) | Advanced Digital Signal Processing (3) |
| Remote Sensing (3) | Microprocessor Practice(3) |
| **R&D (6 Credit)** | Internship in Green Technology for Sustainability(6) | |

# **Teacher line up**

## **Teacher Planning Table for the Special Course of Master in Green Technology for Sustainability**

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| **Sl. No.** | **Full-time/Part-time** | **Job title** | **Name** | **Highest education** | **Expertise** |
| 1 | Full Time | Lecture  professor | Tsong-Ming Lin | Ph.D. in Industrial Management, Clemson University, USA | Digital signal processing, Adaptive signal processing, Speech processing, Communications. |
| **2** | Part Time | Lecture  professor | Shih-Shiung Chen | Ph.D., Department of Agronomy, National Chung Hsing University, Taiwan | Organic agriculture, refined agriculture, soil management |
| 3 | Full Time | Professor | Bo-Ching Chen | Ph.D., Department of Bioenvironmental Systems Engineering, National Taiwan University | Biological environment system simulation, ecological risk assessment and management, facilities and environmental control, ecotoxicology |
| 4 | Full time | Professor | Huang Guanxiong | Ph.D. in Mechanical and Electromechanical Engineering, National Sun Yat-sen University, Taiwan | Energy transmission mechanism design, geometric design |
| 5 | Full Time | Professor | Wen-Tzu Lin | Ph.D. in Soil and Water Conservation, National Chung Hsing University, Taiwan | Soil and water conservation, spatial information, remote sensing detection |
| 6 | Full Time | Professor | Hong Yaoming | PhD in Civil Engineering, National Chung Hsing University, Taiwan | Data exploration, finite element method, environmental monitoring |
| 7 | Full Time | Professor | Lai Xinzhi | PhD in Electrical Engineering, National Cheng Gong University | Digital signal processing, digital IC design |
| 8 | Full Time | Associate Professor | Ye Yuejiao | Ph.D., Department of Life Science, Tunghai University | Allergy immunology, cardiovascular biology, clinical questionnaire analysis |
| 9 | Full Time | Assistant professor | Zhao Jiamin | Ph.D., Institute of Geosciences, Chinese Cultural University | Natural disaster prevention, climate change |

## **Industry Teacher Planning Form for the Master Program for Green Technology for Sustainability**

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| **Sl. No.** | **Name** | **Job title** | **Highest education** | **Expertise** |
| 1 | Lai Benzhi | General Manager of National Taiwan University | Master, Institute of Botany, National Chung Hsing University, Taiwan | Orchid cultivation and management, ten classic Shennong |
| 2 | Chen Yisong | Adjunct Assistant Professor, Department of Fine Agriculture, Mingdao University | Master of Plant Pathology, College of Agriculture, Kashisha University, Thailand | The head of the organic agriculture and former technical delegation in Indonesia was awarded the "Third Class King Star Medal" |
| 3 | Wu Mengkun | President of Yimi Community University | Master of Institute of Innovation Design and Entrepreneurship Management, Far East University of Science and Technology | 14 patents for Black shoulder fly breeding and application, circular agriculture |
| 4 | Zeng Guozheng | Head of Yaoji Industrial Company  Chairman of Taichung City Vector Control Association | Nanhua University Master of Sustainable Green Technology Master Degree | Biological control method, vector mosquito control |
| 5 | Wu Jiansheng | Head of Guitian Dounan Laboratory | Nanhua University Master of Sustainable Green Technology Master Degree | Recycling of economy and construction waste |
| 6 | Cai Rongjin | Chairman of Jingpu Community Development Association | Nanhua University Master of Sustainable Green Technology Master Degree | Circulation agriculture, black water fly reproduction and application |