

CHAPTER 1

INTRODUCTION

1.1. Brief History of Host Institution

National Ilan University (NIU) is the only national university in Yilan County, Taiwan. With initiatives to speed up top-notch research and education for future generations, one of NIU's primary focuses is internationalization which aims to spread knowledge to a larger scientific community. NIU has a long history in Taiwan and is one of the country's first universities. It was established on 12 May 1926 as the Taiwan Provincial Ilan School of Agriculture and Forestry. Since then, the institution has changed its name and focus from a five-year junior college called National Ilan Junior College of Agriculture and Technology to a polytechnic college called National Ilan Institute of Technology.



Figure 1. Official logo of National Ilan University.

The college underwent additional reforms in 2003 to become the comprehensive university it is today, offering B.A., B.S., M.A., M.S., and Ph.D. degrees in 4 colleges: College of Bioresources, College of Engineering, College of Electrical Engineering and Computer Science, as well as College of Humanities and Management, with 15 departments and 17 graduate institutions. The school has undergone changes in conjunction with the shifting social and political environment as a result of Taiwan's rapid industrialization and economic development.

NIU's main campus is in Yilan City, which is a 50-minute drive away from Taipei. In addition, NIU has a campus in Wujie that specializes in professional animal research, a forest

land in Jiaoxi for practical application, forestation, and ecological research, and a recently built campus close to Yilan Scientific Park for Unmanned Aerial Vehicle (UAV) application and smart agriculture. NIU serves as a technology and knowledge provider for commercial and industrial efforts in addition to its role as an educational institution. Conversely, NIU stands out as one of the major venues and supports activities relating to Yilan history and culture, literature, agriculture, and many more.

1.2. Main Activity of Host Institution

There are three main activities of NIU, including teaching and learning, research, as well as internationalization. For teaching and learning, theory and practice are essential components of NIU's educational mission; therefore, NIU will keep fostering cooperation with various universities, industries, and business communities. This can be proven by the fact that NIU has been accredited as Taiwan's Top 26% Universities by the Webometrics Ranking of World Universities (WRWU) in 2016 and has stood in the Top 3 Teaching Excellence National Universities in Taiwan for the past eight consecutive years. In the field of research, NIU aims to be one of the leading research institutes in Taiwan. NIU is one of the few universities in Taiwan whose Science Citation Index is among the Top 1% in the world. Lastly, all colleges must encourage internationalization in the current era of globalization to draw in students from all over the world. In addition to pursuing this objective, NIU aims for sustainable development by upholding educational standards, improving student services, fostering international collaboration, and expanding its global network.

1.3. Organizational Structure of Host Institution

NIU is led by Po-Ching Wu, Ph.D. as the president and Wei-Jung Chen, Ph.D., as the Vice President for Academic Affairs. There are five main administrative units: International Affairs, Academic Affairs, Research and Development, Center for Teaching and Learning Development, and Library and Information Center, as well as four colleges: College of

Bioresources, College of Engineering, College of Electrical Engineering and Computer Science, and College of Humanities and Management. The total numbers of staff (non-academic) and academic faculty of NIU are 200 and 356, respectively.

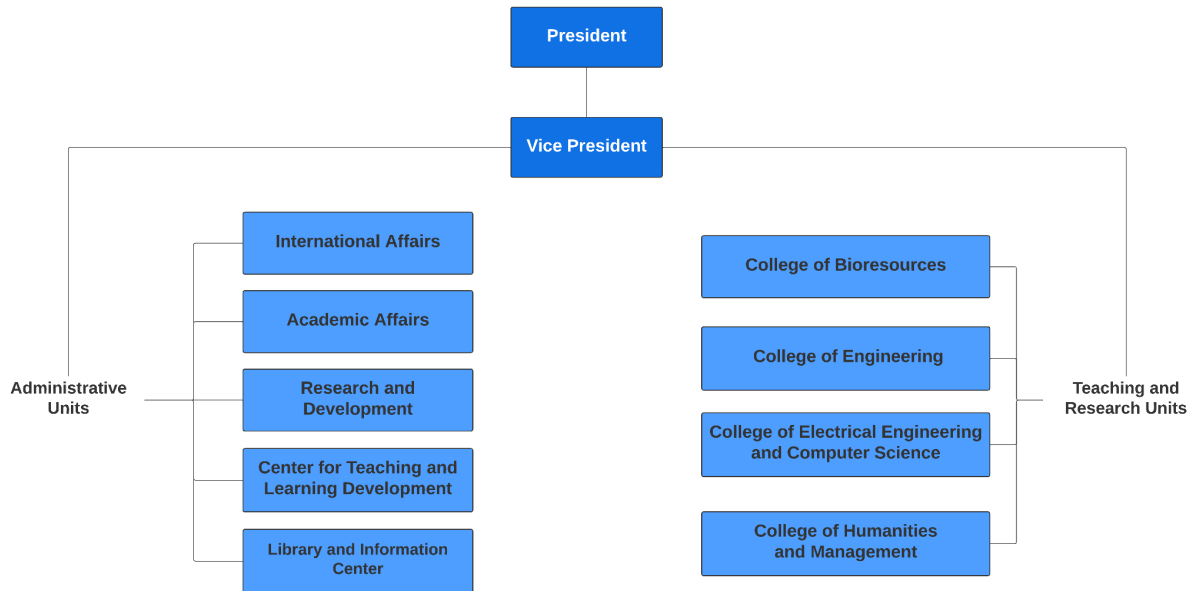


Figure 2. Organizational structure of National Ilan University.

1.4. Description of Department

The author was a visiting student at the College of Engineering in NIU, which is led by Dr. Li Xinyun. The College of Engineering comprises four departments, namely Department of Chemical and Materials Engineering, Department of Civil Engineering, Department of Environmental Engineering, and Department of Mechanical and Electro-Mechanical Engineering. The author's placement was in the Department of Mechanical and Electro-Mechanical Engineering led by Prof. Chen Cheng Hu.

The vision of the Department of Mechanical and Electro-Mechanical Engineering is to cultivate mechanical and electrical engineering professionals with cross-disciplinary E&M integration skills, teamwork, engineering ethics, and social responsibility. To achieve their vision, the department is committed to have the following core capabilities:

1. Possess the ability to apply the basic and applied mechanical and electro-mechanical engineering theories.
2. Possess knowledge and skills related to mechanical and electro-mechanical engineering practices.
3. Ability to integrate information, analyze problems, and participate in academic activities.
4. Demonstrate teamwork, communication, and project management skills.
5. Self-demand, self-directed learning, positive work attitude, and sense of social mission and responsibility.

More specifically, the author worked in Thermofluid Bio-Energy (TFBE) Laboratory under the supervision of Prof. Wang Chin-Tsan and Raymond Tang Chong Ong, M.Eng. as the laboratory assistant. The lab mainly focuses on microbial fuel cell design to improve waste removal efficiency and power generation.