

Graduate Institute of Science Education

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Introduction

Following approval from the Ministry of Education, the Graduate Institute of Science Education (GISE) was founded in 1986 and supported by the Dean of the College of Science, Wu Jing-Yi, and five chairs from the Department of Mathematics, Physics, Chemistry, Biology, and Earth Science, and science education scholars at NTNU. Our doctoral degree, master's degree, and in-service master's degree programs in science education were respectively established in 1986, 1994 and 1998. Each program started to enroll students one year after their establishment.

Our faculty members are composed of nine full-time professors (Mei-Hung Chiu, Chun-Yen Chang, Chen-Yung Lin, Ying-Shao Hsu, Fang-Ying Yang, Wen-Jin Yang, Hsin-Kai Wu, Wen-Hua Chang, and Shiang-Yao Liu), two associate professors (Hak-Ping Tam, Miao-Hsuan Yen), and one assistant professor (Su-Chi Fang). In total, we currently have twelve full-time faculty members specializing in different areas of science education.

Instructional Objectives

Undergraduate Program: To nurture students with knowledge and ability in all fields of earth sciences –astronomy, atmospheric sciences, geology, geophysics and oceanography.

Graduates of the master's degree program are expected to:

1. Demonstrate knowledge of science education and competency in science teaching.
2. Be competent middle school, primary school or vocational school science teachers.
3. Possess an integrated knowledge of basic science and education so as to be potential resources for the education industry.

The graduates of the doctoral program are expected to:

1. Demonstrate advanced knowledge in science education research.
2. Be competent educators in university science courses and science education courses.

3. Be competent educators in general education of mathematics and science.

For both graduate and undergraduate levels, the goal is also to cultivate high school teachers with a complete knowledge of earth sciences.



Degree Requirements

The total graduation credit requirements for master's students at GISE are listed below based on the major of their undergraduate studies:

Category	Department Required	Minimum credits required					Minimum graduation credits*
		Required credits		Elective credits			
		Seminar	Colloquium	Science Education Specialized Subjects	Science Subject	Research Methodology	
I	Math, science, or other related fields	4	4	12	9	5	34
II	Natural science education, math education, or math and science education	4	4	9	12	5	34
III	Others	4	4	12	12	5	37

* Note:

A master's student must complete at least 24 credits of PhD courses, PhD/Master's cross-listed courses, or master's courses.

The total graduation credit requirements for PhD students at GISE are listed below based on the major of their master's studies:

Category	Master's major	Minimum credits required					Minimum graduation credits*
		Required credits		Elective credits			
		Seminar	Colloquium	Science Education Specialized Subjects	Science Subject	Research Methodology	
I	Math, science, or other related fields	8	8	15	6	6	43
II	Science education	8	8	12	12	3	43
III	Others	8	8	15	12	6	49

* Note:

A master's student must complete at least 24 credits of PhD courses, PhD/Master's cross-listed courses, or master's courses.

Feature of the Curriculum

To help students obtain a broad understanding of science education, the graduate curriculum is organized in accordance with 4 research themes: 1) Cognitive Perspectives on Science Learning, 2) Science and Society, 3) Digital Learning and 4) Curriculum, Instruction and Assessment. To develop solid research skills, students in our institute are often involved in government-sponsored research projects during their graduate studies. Other than the basic graduate requirements, there are various student exchange programs and opportunities for international collaboration, helping students to gain international experience in science teaching and science education research.

Career Prospects

As of January 2018, we have 69 doctoral graduates, 224 master's degree graduates, and 91 in-service master's degree graduates in science education. Most of our graduates work in a college/university setting, at the Center of Educational Programs, the Center of General Education, or at primary and secondary schools. Some of them have also pursued careers in museums and public institutes.