

# Graduate Institute of Science Education

## Contact Information

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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, 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) and Two associate professors (Miao-Hsuan Yen, and Su-Chi Fang), One Assistant professor (Jr-Hung, Lin). In total, we currently have twelve full-time faculty members specializing in different areas of science education.

## Instructional Objectives

Objectives of the Master's Program:

- 1.To develop the student's professional knowledge and competencies in excellent science teaching.
- 2.To foster the student's science teaching in elementary, secondary, and vocational schools.
- 3.To cultivate the student's interdisciplinary understanding to meet the need of talents in education fields.

Objectives of the Doctoral Program:

- 1.To develop the student's research knowledge and competencies to become an excellent science education researcher.
- 2.To foster and prepare the student to become an excellent instructor in teaching science and science education courses at the university level.
- 3.To cultivate the student's knowledge of general education in mathematics and science.

## 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	Undergraduate 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	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 PhD student must complete at least 18 credits of PhD courses, PhD/Master's cross-listed 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 2022, 94 students completed the doctoral program, 300 students completed the master's program, and 91 students completed the in-service master's program. Our alumni work at all levels of education nationally and internationally, including K-12 schools, colleges, universities, academic research institutions, and public or private organizations.

