



**INTERDISCIPLINARY GRADUATE SCHOOL OF EARTH SYSTEM SCIENCE AND
ANDAMAN NATURAL DISASTER MANAGEMENT**

PRINCE OF SONGKLA UNIVERSITY, PHUKET, THAILAND

www.essand.psu.ac.th



Doctor of Philosophy Program in Earth System Science

Curricular Title

Doctor of Philosophy Program in Earth System Science

Degree Title

Doctor of Philosophy (Earth System Science)

Abbreviation

Ph.D. (Earth System Science)

Curricular Philosophy and Goals

The Doctor of Philosophy Program in Earth System Science aims to produce graduates, who are fully equipped with high-level knowledge and research skills in the field of Earth System Science, and can create new knowledge and integrate interdisciplinary knowledge for preventing and solving natural disaster problems and managing natural resources and environment.

Global change has occurred rapidly. Natural resources and environment have been degraded quickly. Natural disasters become more intense and occur more often globally leading to invaluable economic, environmental, and social losses. Environmental and natural disaster problems are major causes that threaten global development in many aspects. Understanding these issues requires the integration of knowledge across many disciplines. Developing new knowledge and technologies that will help solve these problems are the goals of this curriculum.

Admission Requirements

1) The applicant must hold

- A bachelor’s degree within the 1st quartile or
- A graduate certificate with cumulative GPA not less than 3.75 or
- A graduate diploma with cumulative GPA not less than 3.50 or
- A master’s degree with cumulative GPA not less than 3.50 or

- Must have a senior project or research study with very good quality.
- All above must be obtained from universities approved by the ESSAND Steering Committee.
- Other applicants may be admitted on conditions that they receive approval from the ESSAND Steering Committee.

2) The applicant must submit a TOEFL or an IELTS score or other Official English scores.

Curriculum Structure

Study Plan 1.1

(for students entering with a Master’s degree)

Total credits: 48

- Selected Topics (2 courses) S/U credits
- Special Studies (2 courses) S/U credits
- Thesis 48 credits

Study Plan 1.2

(for students entering with a Bachelor’s degree)

Total credits: 72

- Selected Topics (2 courses) S/U credits
- Special Studies (2 courses) S/U credits
- Thesis 72 credits

All courses are conducted in English. Selection of selected topic and special study courses is advised by the thesis advisor.

Selected Topic Courses

1) Core Courses

964-501	Earth System Science
964-502	Data Sciences for Earth Science and Disaster Management
964-503	Disaster Risk Management
964-504	Research Methodology
964-505	Scientific Tools for Research



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2) Elective Courses

2.1) Earth Science Module

964-511	Geo-Mechanics Characterization
964-512	Exploration Geophysics
964-513	Environmental Modeling and Management
964-514	Marine Biotechnology
964-515	Environmental Toxicology
964-516	Selected Topic of ESS & NDM II
979-735	Advanced Remote Sensing

2.2) Disaster and Management Module

964-521	Hazard Mitigation
964-522	Investing in environmental and disaster management
964-523	Life Cycle Sustainability Assessment
964-524	Selected Topic of ESS & NDM I
979-772	Policy Planning and Participatory Approach

2.3) Technology and Technique Module

964-531	Sensor Technology and the Internet of Things
964-532	Data Management and Knowledge Discovery
964-533	Selected Topic of ESS & NDM III
979-732	Advanced Geographic Information System

2.4) Pre-Research Module

964-601	Special Study I
964-602	Special Study II

3) Thesis

964-704	Thesis
964-705	Thesis

All courses are conducted in English. Selection of course works is advised by the thesis advisor.

Thesis Committee

The thesis committee is composed of at least 5 members, including an advisor (Chairman of the committee), a co-advisor, two faculty members, and an external examiner. In the thesis defense, thesis advisors cannot answer questions and vote for the student.

Main Thesis Advisor

The main thesis advisor must be programme's lecturer and must have Ph.D. degree or Associate Professor at least and have 3 academic achievements in last 5 year. At least one achievement must be a research and the papers must not be from his/her thesis work

External Examiner

- The External Examiner is assigned by the ESSAND Steering Committee.
The thesis committee proposes two candidates to the ESSAND Steering Committee as soon as the student completes all required courses. The board chooses one to serve as the External Examiner.
- The External Examiner's academic qualification has to be at least Associate Professor, and has published at least two papers in journals listed in the ISI database.
- The External Examiner can veto the quality of the thesis.

Thesis Final Defense Committee

The thesis final defense committee consists of the same members as the thesis committee.

Graduation Requirements

- 1) Have completed all required courses of the curriculum.
- 2) Have passed the qualifying examination.
- 3) Have passed the thesis proposal defense.
- 4) Have passed the thesis final defense.



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Graduation Requirements

- 5) Have the thesis published or have obtained acceptance of publication for 2 papers, where the first paper has to be in a journal listed in the ISI database with the first author and the paper has to be in a journal listed in the Scopus database.
- 6) Have satisfied one of the following English proficiency requirements:
 - IELTS test score 6.0 or higher overall for the Academic Test or
 - TOEFL test score:
 - For the TOEFL IBT 78 or higher or
 - For the TOEFL Paper-Delivered Testing:
 - Reading 13 or higher, and
 - Listening 15 or higher, and
 - Writing 22 or higher
 - For the TOEFL ITP:
 - Listening Comprehension 55 or higher, and
 - Structure & Written Expression 63 or higher, and
 - Reading Comprehension 56 or higher
 - CU-TEP test score 80 or higher or
 - PSU-TEP test score 73 or higher

Faculty Members Responsible for the Program

- Prof. Dr. Kiyota Hashimoto
 - D.Eng. (Information Science) Nara Institute of Science and Technology, Japan
 - Responsible courses: 964-502, 964-504, 964-505, 964-516, 964-524, 964-531, 964-532, 964-533, 964-501, 964-601, 964-602, 964-704, 964-705
- Dr. Kritana Prueksakorn
 - D.Eng. (Environmental Engineering) from Changwon National University, South Korea
 - Responsible courses: 964-501, 964-504, 964-505, 964-513, 964-516, 964-523, 964-524, 964-533, 964-601, 964-602, 964-704, 964-705

- Dr. Tanwa Arpornthip
 - Ph.D. (Experimental Physics) from University of Virginia, USA
 - Responsible courses: 964-501, 964-503, 964-504, 964-505, 964-514, 964-516, 964-523, 964-524, 964-533, 964-601, 964-602, 964-704, 964-705

Programme Lecturers

- Prof. Dr. Kiyota Hashimoto
 - D.Eng. (Information Science) Nara Institute of Science and Technology, Japan
 - Responsible courses: 964-502, 964-504, 964-505, 964-516, 964-524, 964-531, 964-532, 964-533, 964-601, 964-602, 964-704, 964-705
- Assoc. Prof. Dr. Raymond James Ritchie
 - Ph.D. (Plant Physiology) from University of Sydney, Australia
 - Responsible courses: 964-514, 964-515, 964-601, 964-602, 964-704, 964-705
- Asst. Prof. Dr. Werapong Koedsin
 - Ph.D. (Survey Engineering) from Chulalongkorn University, Thailand
 - Responsible courses: 979-735, 964-504, 964-505, 964-532
- Dr. Avirut Puttiwongrak
 - D.Phil. (Environment and Resource System Engineering) from Kyoto University
 - Responsible courses: 964-501, 964-504, 964-505, 964-511, 964-512, 964-516, 964-521, 964-524, 964-533, 964-601, 964-602, 964-704, 964-705



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- Dr. Vipawee Dummeem
 - Ph.D. in Biology (International Program) from Mahidol University, Thailand
 - Responsible courses: 964-514, 964-515, 964-516, 964-524, 964-534, 964-601, 964-602, 964-704, 964-705

Adjunct Program Lecturers

- Dr. Somkiat Khokiattiwong
 - Ph.D. (Ecotoxicology) from University of Southern Denmark, Denmark
 - Responsible courses: 964-501