Doctor of Philosophy program in Electrical Engineering

Doctor of Philosophy program in Electrical Engineering

The Electrical Engineering Doctoral program offers a unique opportunity for the training of graduate students toward the completion of the Ph.D.in Electrical Engineering.
Our focal point covers the areas of power electronics engineering, electronics and embedded systems, control system and signal processing, communications electrical engineering, and rehabilitation engineering.

Graduate students are welcomed to have hands-on experiences in our thriving research centers, namely, Analysis and Development of Electric Drives System, Advanced Systems and Software Engineering Research Team: ASSERT, Embedded System and Smart Device Research Unit: ESSDRU, Device Lab and Computer Vision and Human Interaction Technologies Laboratories: Vision Lab.

Objectives

Upon graduation, candidates are to demonstrate the following qualifications.
- Outstanding in academic abilities, especially in implementation of research findings within the field of Electrical Engineering.
- Possessing an active inquiry mind to conduct advanced research in Electrical Engineering.
- Dynamic self-development to keep up to date with the rapid advancement of innovations in the field.

Admission

1. Program Type 1.1 (Dissertation Only)
Applicants must have the following qualifications.
- Applicants must hold a Master's Degree or equivalent in Electrical Engineering or related field.
- Applicants must have other qualifications as stipulated by Naresuan University Regulations of Graduate Studies in B.E. 2559 on "Qualifications of admission, or Notification of Naresuan University."
- Applicants must have a minimum GPA at Master Degree level of not less than 3.00, or an approval obtained from the instructor who is responsible for the curriculum.

Doctor of Philosophy program in Electrical Engineering

Admission

2. Program Type 1.2 (Dissertation only)

Applicants must have the following qualifications.
- Applicants must hold a Bachelor's Degree or equivalent in Electrical Engineering or related field.
- Applicants must have other qualifications as stipulated by Naresuan University Regulations of Graduate Studies in B.E. 2559 on "Qualifications of admission, or Notification of Naresuan University."
- Applicants must have a minimum GPA at Bachelor Degree level of not less than 3.25, or an approval obtained from the instructor who is responsible for the curriculum.

### 3. Program Type 2.1 (with course work)

Applicants must have the following qualifications.
- Applicants must hold a Master's Degree or equivalent in Electrical Engineering or related field.
- Applicants must have other qualifications as stipulated by Naresuan University Regulations of Graduate Studies in B.E. 2559 on "Qualifications of admission, or Notification of Naresuan University."

4. Program Type 1.2 (with course work)

Applicants must have the following qualifications.
- Applicants must hold a Bachelor's Degree or equivalent in Electrical Engineering or related field.
- Applicants must have other qualifications as stipulated by Naresuan University Regulations of Graduate Studies in B.E. 2559 on "Qualifications of admission, or Notification of Naresuan University."
- Applicants must have a minimum GPA at Bachelor Degree level of not less than 3.25.
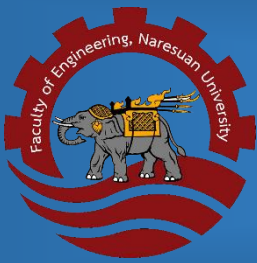
Doctor of Philosophy program in Electrical Engineering

Credit Requirements

Requirements	Option 1.1	Option 1.2	Option 2.1	Option 2.2
1.Coursework			12	24
1.1 Core Courses			3	6
1.2 Electives			9	18
2. Dissertation	48	72	36	48
3. Required Non-credit Courses	3	7	3	7
Total	**48**	**72**	**48**	**72**

Medium of Instruction

Thai and English

Research Focus
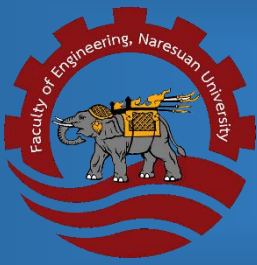
Power Electrical Engineering
- Distribution generation
- Energy conservation
- Energy-economy-environmental modeling
- Energy and environmental economics
- Energy efficiency and policy
- Efficient energy conversion
- Electrical machines analysis
- Energy planning and policy
- Finite element analysis
- Integrated climate-land-energy-water (CLEW) modeling
- Machine design
- Power electronics
- Power quality in distribution network
- Photovoltaic systems
- Power system modeling and analysis
- Renewable energy
- Rural electrification
- Storage batteries
- Smart Grid

Electronics and Embedded Systems
- Electronic circuits and systems
- Electrical and optical properties of semiconductor nanostructures
- Theoretical and numerical study on properties of various optical resonators, e.g. ring resonator, photonic crystals using finite-difference time-domain (FDTD) method

Control System and Signal Processing
- Artificial intelligent control
- Adaptive signal processing
- Automatic visual inspection technology
- Biomedical image processing
- Complex analysis
- Computational intelligence
- Control theory
- Data compression
- Digital image processing
- Laser electro photography
- Iterative learning control
- Intelligent systems

Doctor of Philosophy program in Electrical Engineering

Research Focus

Control System and Signal Processing

- Math finance for real analysis and stochastic processes with assets in the market
- Medical image processing
- Machine learning
- Multidimensional linear systems
- Mobile media recognition and retrieval
- Mobile robot navigation techniques
- Multimedia signal processing
- Neural networks
- Optimization and approximation
- Operator theory
- Robotics
- Robust and adaptive control
- Repetitive control
- Rehabilitation engineering
- Robotics and mechatronics
- Signal analysis

Communications Electrical Engineering

- Cellular and wireless communications
- Coding theory
- Computational electromagnetic
- Coding theory
- Computational electromagnetic
- Detection theory
- Dielectric antennas
- Finite element analysis
- Networking
- Optical communications
- Satellite communications
- Stochastic signals and systems

Requirement for Graduation

In accordance with the Graduate School Rules and Regulations.