



School of Science and Technology Shinawatra University

Doctor of Philosophy Program in Information Technology Ph.D. (Information Technology)

Curricular Title

Doctor of Philosophy Program in Information Technology

Degree Title

Doctor of Philosophy (Information Technology)

Abbreviation

Ph.D. (Information Technology)

Curricular Philosophy and Goals

The Doctor of Philosophy (PhD) in Information Technology (international program) strives to produce career researchers and academics competent to the highest global standards expected of personnel employed throughout the IT profession.

With a founding philosophy of continuous improvement and constant change propelled by excellence in research, our graduates from this program are of the highest caliber, who by cultivating new knowledge and innovative technologies, can go on to become a key resource for promoting the development and prosperity of any nation.

While recognizing a need to fully utilize existing resources in the present day context, we are equally aware that constant high speed innovation is now the only strategy that matters! The PhD international program at SIU is therefore designed to produce individuals with a passion for creativity, an energy and mind set not only for solving recognized problems with existing know-how, but capable of solving future problems by inventing new technologies to do so.

And because we fully appreciate that this cannot be achieved in isolation, our highly qualified and experienced faculty members actively maintain links with individuals, universities and businesses both in Thailand and internationally.

Curriculum Structure and Components

Students must complete a minimum requirement of 60 credits for graduation.

Plan A1		Plan A2	
Dissertation	60 Credits	IT Module	12 Credits
		Dissertation	48 Credits

1. Taught Course Module

12 Credits

Complete the following 4 courses (12 credits) with the approval of the academic advisor.

1303710	Advanced Research Methodology	3(3-0-9)
1303711	Special Study	3(3-6-12)
1303712	Selected Topic I	3(3-0-9)
1303713	Selected Topic II	3(3-0-9)

* for course 1303712 and 1303713, students may select any course from the following list.

1303714	Information Assurance and Security	3 credits
1303715	Data Science and data visualization	3 credits
1303716	Advanced Topics on Internet Technology	3 credits
1303717	Advanced Artificial Intelligence	3 credits
1303718	Systems Optimization Techniques	3 credits
1303719	Advanced Software Engineering	3 credits
1303720	Advanced Topics on Information System	3 credits
1303721	Advanced Network Security	3 credits
1303722	Advanced Software Project Management and Measurement	3 credits

2. Thesis Work

(Plan A1)

60 Credits

1303960 Dissertation 60(0-120-240)

(Plan A2)

48 Credits

1303948 Dissertation 48(0-96-192)

Course Description

A student may select any course which is relevant to his/her thesis topic. Consultation on the selection with his/her advisor is recommended.

1303710 Advanced Research Methodology 3 (3-0-9)

Advanced research in information technology, research instruments for data collection, principles of descriptive and advanced inferential statistics, hypothesis testing, research summarization, presentation, interpretation, research proposal format, group research planning.

1303711 Special Study 3 (3-6-12)

Topics of specialized areas in information technology under the guidance of research advisors.

1303712 Selected Topic I 3 (3-0-9)

Topics of interest and new developments in information technology related to dissertation under the guidance of research advisors.

1303713 Selected Topic II 3 (3-0-9)

Topics of interest and new developments in information technology related to dissertation under the guidance of research advisors.

1303714 Information Assurance and Security 3 (3-0-9)

Advanced research areas in the principles of confidentiality, integrity, authentication, and availability of information and systems; the policies and practices of information assurance; organizational policies; access controls; software and network design; logging and auditing; study of information safety and security fundamental, threats, pattern and technique of information system intrusion, vulnerability analysis, policy formulation of information system security, tools and techniques for information security, firewall, intrusion detection system, techniques for encryption and decryption, information recovery.

1303715 Data Science and data visualization 3 (3-0-9)

Effective data preparation for analytical process; fundamental processes of data management such as data collection, data cleansing and data integration; efficiently communicate analyzed data to managing directors for better business decision makings to improve business



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operation; problems, issues and challenges associated with enterprise data management.

1303716 Advanced Topics on Internet Technology 3 (3-0-9)

Advanced topic on Internet technology to keep student in pace with the development in technology to enable the student to pursue further research in each major and/or in multi-disciplinary major.

1303717 Advanced Artificial Intelligence 3 (3-0-9)

Concepts and techniques necessary for advanced research and study in artificial intelligence such as machine learning; AI search techniques; optimization techniques; neural networks; fuzzy logic, knowledge representation; computer vision; natural language processing; robotics.

1303718 Systems Optimization Techniques 3 (3-0-9)

Optimization concepts; types of optimization problems; calculus of variations; Lagrange multipliers; Gradient techniques; linear programming; the simplex method; nonlinear and dynamic programming; applications to engineering, energy and industrial systems.

1303719 Advanced Software Engineering 3 (3-0-9)

Techniques for developing the large software systems; project planning; modularization; task assignment by considering the characteristics of project; management techniques; software processes; agile development; requirements engineering; architectural design; design patterns; open source development; implementation techniques; testing and quality control; documentation and maintenance.

1303720 Advanced Topics on Information System 3 (3-0-9)

Advanced topic on Information system to keep student in pace with the development in technology to enable the student to pursue further research in each major and/or in multi-disciplinary major.

1303721 Advanced Network Security 3 (3-0-9)

An in-depth study of various network attacks techniques and methods to defend against them; A number of threats and vulnerabilities of the Internet including various vulnerabilities of TCP/IP protocols; denial of service (DOS); attacks on routing; attacks on DNS servers; TCP session hijacking including defending mechanisms such as intrusion detection; firewalls; tracing the source of attacks; anonymous communication; IPsec; virtual private network, and PKI.

1303722 Advanced Software Project Management and Measurement 3 (3-0-9)

Advanced methods used to manage software development; software project management and control, configuration management; risk management; development of appropriate software matrices; uses of software matrices for software quality assurance.

1303948 Dissertation 48(0-96-192)

Individual research works by students through their interests in information technology and education with using information technology as a management tool; the process needs to follow research methodology under code of ethics for researchers, under the supervision of their advisors; formal report writing, oral presentation and defense of the dissertation research work are required.

1303960 Dissertation 60(0-120-240)

Conducting a research that has an original contribution that creates body of knowledge or innovation which impacts to the social changes and education using an effective and efficient information system and applying the developed knowledge and skills to handling real-world information related technology problems under code of ethics for researchers.