

School of Information Technology Shinawatra University

**Master of Science Program in Information Technology
M.Sc. (Information Technology)**

Curricular Title

Master of Science Program in Information Technology

Degree Title

Master of Science (Information Technology)

Abbreviation

M.Sc. (Information Technology)

Curricular Philosophy and Goals

The MSIT program at Shinawatra University aims to produce graduates with a range of technical knowledge and skills in planning, designing and managing IT systems and infrastructure, enabling them to pursue successful careers either as IT entrepreneurs, or work at senior positions in industry/academia.

The program facilitates the needs of both non-IT/CS and IT/CS students to accomplish a Master degree in IT. With foundation courses in four key areas (Software Development, System Architecture, Computer Networking and Data Management), non-IT/CS students will learn all the necessary IT fundamentals before continuing to subsequent advanced-level courses.

In addition to foundation and advanced IT courses, the program also consists of elective courses in the specialization areas of Management Information System, Software Engineering and Web and Mobile Technologies. Most courses include realistic projects and case studies where students will gain hands-on experience with state-of-the-art technologies, solutions and tools used in today's organizations and businesses.

Curriculum Structure and Components

Students must complete a minimum requirement of 36 credits to obtain the Master of Science in Information Technology (MSIT) degree. Each student can choose to follow either Study Plan A (Taught-Course Program with Thesis) or Study Plan B (Taught-Course Program with Independent Study). The curriculum is divided into Foundation Module, Core IT Module, Elective Course Module and Thesis or Independent Study.

Plan A (Thesis)		Plan B (Independent Study)	
Foundation Module	12 Credits	Foundation Module	12 Credits
Core IT Module	9 Credits	Core IT Module	9 Credits
Elective Course Module	3 Credits	Elective Course Module	12 Credits
Thesis	12 Credits		

1. Foundation Module 12 Credits

Complete the following 4 courses (12 credits) with the approval of each student's academic advisor by considering the student's background in IT in that particular topic.

	IT502 Data Structures and Algorithms: Object-Oriented Approach	3(3-0-6)
or	IT523 Information System Development and Software Engineering	3(3-0-6)
	IT511 Computer Architecture and Operating Systems	3(3-0-6)
or	IT603 Special Topics in Information Technology	3(3-0-6)
	IT512 Computer Networks and Internet Technologies	3(3-0-6)
or	IT571 Computer Network Design and Management	3(3-0-6)
	IT521 Database Systems and Database Design	3(3-0-6)
or	IT572 Advanced Database Technologies and DB Administrations	3(3-0-6)

2. Core IT Module 9 Credits

	IT522 Management Information Systems	3(3-0-6)
	IT573 Information Technology Project Management	3(3-0-6)
	IT574 System Security and Audit	3(3-0-6)

3. Free Electives

The students select courses from the following list to satisfy their elective course requirements. In addition, they can select any graded courses offered by any post-graduate program within the university with the approval of each student's advisor.

	IT501 Foundation of Computing	3(3-0-6)
	IT603 Special Topics in Information Technology	3(3-0-6)
	IT611 Research Methodology	3(3-0-6)
	IS571 Knowledge Management	3(3-0-6)
	IS572 E-Business and E-Commerce	3(3-0-6)
	IS573 Business Analytics and Intelligence	3(3-0-6)
	IS574 Enterprise Systems and Architecture	3(3-0-6)
	IS575 IT Strategy & Governance	3(3-0-6)
	WM571 Computer Graphics and Multimedia Technologies	3(3-0-6)
	WM572 Advanced Web Technologies	3(3-0-6)
	WM573 Web Information Systems	3(3-0-6)
	WM574 Web Application Patterns, Architectures and Frameworks	3(3-0-6)
	WM575 Ubiquitous Computing and Mobile Applications	3(3-0-6)

4. Thesis (Plan A) 12 credits

IT612 Thesis 12(0-24-48)

5. Independent Study (Plan B) 3 credits

IT601 Independent Study 3(0-6-12)

School of Information Technology

Shinawatra University

Course Description

IS571 Knowledge Management 3(3-0-6)

This is an introductory course in Knowledge Management (KM) which explores KM applications, tools and practices in today's organizational environment. Major topics include: KM models, framework and life-cycle, organizational memory and learning, community of practice, knowledge extraction, representation and engineering issues, best practices, cultural and economic factors, intellectual capital and innovation management. Throughout the entire course, student will investigate how IT facilitates organizational KM initiatives through case studies and using state-of-the-art KM techniques and tools.

IS572 E-Business and E-Commerce 3(3-0-6)

The course focuses on important issues, technologies and tools related to e-business and e-commerce. Topics include e-business' technologies and architectures, e-commerce business models; innovative e-commerce systems; e-commerce security issues; social, ethical and other emerging issues. Overviews of the technologies that enable e-business and e-commerce, including communications technology, portals and search engines, Web site design and management, electronic payment systems, security and mobile commerce are presented.

IS573 Business Analytics and Intelligence 3(3-0-6)

This course systematically introduces techniques to deal with such huge data and information in business intelligence gathering, decision making and performance monitoring. This course will focus on both data and model driven approaches to decision support; and to this pursuit, will cover quantitative and predictive analysis of data using relevant computing and business models. Major topics include basic data mining techniques in forecasting, classification, clustering and association; OLAP/OLAM and data warehousing. BI case studies from diverse industries are also the key component of this course.

IS574 Enterprise Systems and Architecture 3(3-0-6)

This course introduces students to the aspects of Enterprise Architecture concepts. Using a framework/methodology like TOGAF, Enterprise Architecture Development Method and its deliverables, including business, data, applications and technology architecture are introduced to the students along with Enterprise Architecture Governance. Introduction to architectural principles and patterns, basic building blocks, and requirement engineering using business scenarios are also covered.

IS575 IT Strategy & Governance 3(3-0-6)

This course aims at bridging technology and the management context. The aim is to consider information technology management, from strategy formulation (by different types of business operating in a variety business fields), to operation and retirement of IT asset. It is envisaged the course will be part lecture, part case study seminar based. Important topics include IT organization, planning, policies, governance and budgeting. In addition, a few lectures on certain professional standards, such as, COBIT, ITIL and ISO/IEC27001 and ISO/IEC17799, are also covered.

IT501 Foundation of Computing 3(3-0-6)

This course introduces the fundamental mathematical and theoretical models of computing. Major topics include Logic, Formal proof methods, Finite automata, Regular expressions, Context-free grammars, Pushdown automata, Turing machines, Decidability and Undecidability, Computational complexity theory, Tractability and Intractability.

IT502 Data Structures and Algorithms: Object-Oriented Approach 3(3-0-6)

Object-oriented paradigm. Java's language fundamentals. Basic Java packages. Recursion. Basic data structures, including stacks, queues, lists, trees, graphs. Sorting and searching algorithms. Complexity analysis and applications.

IT511 Computer Architecture and Operating Systems 3(3-0-6)

This course introduces computer system architecture and operating system concepts in such a way that students will learn about the interplay between hardware and software having operating system as an interface between the hardware and software. Major topics in Computer Architecture include digital logic, processor (CPU) architecture, memory subsystem, I/O subsystem. Major topics in Operating Systems covers process, thread and multiprogramming concepts (scheduling, synchronization, concurrency, deadlock etc.), memory and virtual memory management, device and I/O management, as well as storage media and file systems.

IT512 Computer Networks and Internet Technologies 3(3-0-6)

This is an introductory course in Computer Networking. Basic networking concepts, protocols, technologies and standards are introduced using the Internet as an example. Wireless, Mobile and Multimedia Networking protocols and applications are explained. Evolution of the Internet with WWW and subsequent emerging technologies are also introduced along with various networking tools and applications.

IT521 Database Systems and Database Design 3(3-0-6)

This course aims to introduce the foundations of database systems, including such basic concepts as data model, the relational model, entity relationship model, SQL, and design aspects like schema normalization, and transactions. Some aspects of transactions; recovery; concurrency control; distributed, parallel, and heterogeneous databases are also covered. Basic Data warehousing and Data Mining concepts are introduced to the students.

IT522 Management Information Systems 3(3-0-6)

The role of information systems in contemporary organizations. Basic concepts and applications of information systems and management information systems. Analysis and design of information systems. Introduction to decision support systems, intelligent information systems, expert systems, data mining, and data warehouse. Distributed information systems and Web-based information systems.

IT523 Information System Development and Software Engineering 3(3-0-6)

A broad introduction to software systems engineering, with the emphasis on widely-used techniques for developing complex, reliable software intensive systems and for managing common practical concerns (e.g., time, cost and scope). A range of software processes are covered, addressing core issues in the specification, design and construction of large-scale systems (with particular emphasis on requirements elicitation, analysis, validation and management). Other topics include real-time systems, (security and safety) critical-systems, fault-tolerant computing, software development methodologies (e.g., agile development), software reuse, verification and validation, software testing, software evolution, software engineering process improvement approach, CMM (Capability Maturity Model).

School of Information Technology

Shinawatra University

IT571 Computer Network Design and Management 3(3-0-6)

This course focuses on realistic projects in designing and managing networks using a leading networking equipment vendor's technology and solutions. Topics include VPN, Computer and Telephony Integration, VoIP. Advanced topics also include Distributed Systems, Virtual Infrastructure Management, GRID and Cloud computing. Students should gain practical knowledge and experience in networking so as to be able to easily qualify for professional certification.

IT572 Advanced Database Technologies and DB Administrations 3(3-0-6)

This course focuses on realistic operational database on a popular platform (e.g., Oracle, MS SQL Server, MySQL etc.). Topics include database administration, backup and recovery, very large DB management, scalability, transaction and concurrency, parallel database etc. Students should gain practical knowledge and experience so as to be able to easily qualify professional certification.

IT573 Information Technology Project Management 3(3-0-6)

This course focuses on how an IT project management is planned, monitored and controlled. Important topics include IT Project Failure and Success; Project Management Foundation; PMI framework; Project Initiation; Project Scope Definition; Time Management and Scheduling; Resource Planning; Cost Management and Control; Communications Management; Project Risk Management; Procurement and Sourcing; IT Project Management Methodologies; Controlling and Managing Changes; Quality Assurance and Control; Phase and Project Closure.

IT574 System Security and Audit 3(3-0-6)

This course introduces students to Industry standard practices and standards in the auditing and security aspects of information technology in an organization. The course covers basic security and cryptography concepts and also examination of topics in the management of information technology security including access control systems & methodology. Specific areas covered include the audit process, IT governance, systems and infrastructure life cycle management, IT service delivery and support, protection of information assets, ISO/IEC27001 and ISO/IEC17799 standards and business continuity and disaster recovery planning. Privacy related aspects will also be covered.

IT601 Independent Study 3(0-6-12)

Students are required to propose topics in information technology in consultation with faculty members who will become their supervisors within the first two weeks of the semester. Students are responsible for submitting and presenting their final reports at the end of the semester.

IT603 Special Topics in Information Technology 3(3-0-6)

This course covers one or more advanced topics in Information Technology. It is offered only when there is an opportunity to present material not included in the established curriculum or to keep track of latest development in IT.

IT 611 Research Methodology 3(3-0-6)

Concept of scientific and technological research; statistics for research planning and research study; data collection and data analysis; interpretations; conclusions and recommendations of research results. Special focus on IT research.

IT612 Thesis 12(0-24-48)

Students are required to propose a research topic in information technology under an approval of their thesis advisors and thesis committees. Each student is responsible for submitting and presenting his/her thesis and a draft paper for publication in an approved national journal or an international conference. The advisor will be responsible for having the paper published.

WM 571 Computer Graphics and Multimedia Technologies 3(3-0-6)

The purpose of this course is to give students a broad foundation in issues related to creating computer graphics, multimedia and hypermedia applications. Topics to be covered include history and philosophy of hypermedia, principles of human-computer interaction, multimedia programming, optimizing for optical media/new media and the WWW, digital representation and editing of media (audio, graphics, video), media compression and transmission, and delivery of multimedia applications.

WM 572 Advanced Web Technologies 3(3-0-6)

This course provides students with an understanding of advanced technologies pertaining to the World Wide Web. Topics include basics of Web design and Web content development, network security, electronic commerce, Web 2.0, content-management system (CMS), Wikipedia, blogs, RSS, social networking services, Search Engine Optimization (SEO), Web tools and API, mashups and XML technologies.

WM 573 Web Information Systems 3(3-0-6)

This course examines the techniques for building information systems on the World Wide Web. Topics include concepts & fundamentals of Web-based Information Systems (WIS), HTML, XHTML, CSS, JavaScript, Java Servlet, Java Server Page, client-server database applications on the Internet, and XML. Latest and advanced technologies for developing WIS: AJAX, Web Security, Web Search, Web Service and current trends in WIS.

WM 574 Web Application Patterns, Architectures and Frameworks 3(3-0-6)

This course focuses on important patterns, architectures and frameworks for the development of dynamic websites, web applications and web services. Important topics include evolution of Web application design architecture, MVC (model-view-controller) pattern, page-centric architecture, servlet-centric architecture, Web application frameworks, and best practices.

WM 575 Ubiquitous Computing and Mobile Applications 3(3-0-6)

This course introduces fundamental concepts and state-of-the-art technologies in the areas of ubiquitous computing and mobile applications. Topics include fundamentals of ubiquitous computing, mobile information systems and applications, wireless information system architectures, mobile application protocols, mobile application development platforms, and business case studies of mobile applications.