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# ICT Program

信息与通信科技 (ICT) 本科

四年制英语课程

玛希敦大学信息与通信科技学院 (ICT Mahidol)

# Highlights

## 学院亮点

- ICT Program - Example of Best Practices (level 6 out of 7) as assessed by AUN-QA
- Elective courses with 8 specializations with cutting-edge technologies
- International program - all courses provided in English
- Life-long learning skills related to digital age technology through project-based learning
- Availability for financial supports and scholarship for academic and activity excellence
- Opportunities for international student exchange and internship programs
- Great career opportunities
- ICT 课程经东盟大学联盟质量评估, 品质卓越(达到七级中的第六级)
- 八门高科技专业主修课程
- 所有课程皆以英语授课
- 以专案项目方式学习数位技术相关技能
- 有机会得到财务支持及卓越表现奖学金
- 有机会参加国际交换学习或实习计划
- 各种工作机会

# Why study

## ICT International Program

### 为何选择 ICT 英语课程

- Deep experience in the desired areas
- Deep interdisciplinary knowledge and skills
- Up-to-date and outstanding curriculum in IT field that designed to fulfil the current market labor
- Various IT specializations that harmonize the students' career goals
- A lot of MoUs to strengthen academic and research collaborations with IT leading universities around the world
- 深度体验学习领域
- 深度跨领域知识与技能
- 新颖的课程设计符合信息技术领域的就业市场需求
- 针对学生就业目标设置各种信息技术专业
- 与世界各国拥有顶尖信息技术的大学签订多种合作协议, 增进学术研究合作



# 8 Specializations

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Bachelor of Science in Information and Communication Technology (ICT International Program) offers 8 areas of specializations, which are closely related to career paths and academic areas of interest. The ICT flexible curriculum structure allows students to personalize their specializations by choosing subjects from one or more specializations.

信息与通信科技学院本科(ICT英语课程)提供八门主修，能与职业规划和学习兴趣紧密相连。ICT弹性课程结构允许学生在一个或多个专业中选择科目，自行规划专业主修。

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**Computer Science**

计算机科学

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**Database Systems**

数据库系统

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**Networks and Security**

网络与安全

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**Software Engineering**

软件工程

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**Health Information Technology**

健康信息科技

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**Interactive Multimedia Technology**

交互式多媒体科技

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**Information System Management**

信息系统管理

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**Artificial Intelligence**

人工智能

When completing the program, the graduates will be able to  
完成课程后，毕业生将具备以下能力

## Program-Level Learning Outcomes: PLOs

课程水平学习成果: PLOs

**PLO1**

Solve ICT related problems using critical thinking, problem solving and ICT disciplinary skills

能以批判性思维、解难能力、及 ICT 学科技能解决 ICT 相关问题

**PLO2**

Demonstrate abilities to work in ICT related project collaboratively

能展示在 ICT 相关项目中协作工作的能力

**PLO3**

Perform the individual, social and ethical responsibilities of a professional working in ICT-related disciplines

能履行 ICT 相关学科专业人员的个人、社会、及道德责任

**PLO4**

Use effective command of the English language for professional communication

能使用英语进行有效的专业沟通

## Stream Learning Outcomes: SLOs

主修学习成果: SLOs

**SLO1**

Design a wide range of applications in the real-world using knowledge and skills in one or more specializations including Computer Science (CS), Database Systems (DB), Network and Security (NS), Software Engineering (SE), Health Information Technology (HT), Interactive Multimedia Technology (MT), Information Systems Management (IS), and Artificial Intelligence (AI)

将一个或多个专业知识技能实际应用在各种应用程序设计上，包括计算机科学 (CS)、数据库系统 (DB)、网络与安全 (NS)、软件工程 (SE)、健康信息科技 (HT)、交互式多媒体科技 (MT)、信息系统管理 (IS) 和人工智能 (AI)

**SLO2**

Develop ICT-based solutions or ICT-based research with the awareness of advanced technologies using ICT professional practices and lifelong learning skills

使用 ICT 专业和长期培养的技能，再透过先进技术的意识，开发以 ICT 为基础的解决方案或研究

# Program Structure

<b>1) General Education</b>	<b>no less than</b>	<b>30</b>	<b>Credits</b>
1.1 Creativity Literacy	no less than	2	Credits
1.2 Health and Self-development Literacy	no less than	2	Credits
1.3 Science and Environmental Literacy	no less than	2	Credits
1.4 Finance and Management Literacy	no less than	2	Credits
1.5 Inter-cultural and Global Awareness Literacy	no less than	2	Credits
1.6 Civic Literacy	no less than	2	Credits
1.7 Required Language Courses	no less than	12	Credits
<b>2) Specific Courses</b>	<b>no less than</b>	<b>84</b>	<b>Credits</b>
2.1 Core Courses		12	Credits
2.2 Required Courses		48	Credits
2.2.1 Organization and Information System Courses		9	Credits
2.2.2 Technology Application Courses		6	Credits
2.2.3 Software Development Courses		12	Credits
2.2.4 Fundamental and Infrastructure Courses		15	Credits
2.2.5 System Architecture Courses		6	Credits
2.3 Elective Courses (Specialization)	no less than	18	Credits
2.4 Capstone Courses	no less than	6	Credits
<b>3) Free Electives</b>	<b>no less than</b>	<b>6</b>	<b>Credits</b>
<b>Total number of credits</b>	<b>no less than</b>	<b>120</b>	<b>Credits</b>

# ICT Program

4-Year International Program







# 8 Specializations

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## Computer Science

计算机科学

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## Database Systems

数据库系统

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## Networks and Security

网络与安全

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## Software Engineering

软件工程

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## Health Information Technology

健康信息科技

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## Interactive Multimedia Technology

交互式多媒体科技

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## Information System Management

信息系统管理

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## Artificial Intelligence

人工智能

# Computer Science

## 计算机科学

This specialization focuses on the applications of computer science theories to solve real-world problems. Students will study core computer science related topics, such as, algorithm analysis, Organization of Programming Languages, Theory of Computation, etc.

本专业着重于应用计算机科学理论解决实际问题。学生将学习与计算机科学相关的核心主题，例如算法分析、编程语言架构、计算理论等。

### Specialty Courses/ 专业课程

- Foundations in Computer Science  
计算机科学概论
- Algorithms Design and Analysis  
算法设计与分析
- Principles of Compiler Design  
编辑器设计原理
- Theory of Computation  
计算理论

### Career Opportunities/ 工作机会

- Computer Scientist  
计算机科学家
- Computer Science Researcher  
计算机科学研究员

# Database Systems

## 数据库系统

The Database Systems specialization covers both fundamental and applied concepts in database management systems. Students will develop their theoretical and practical skills in applying database technologies to real-world problems, such as, Data Warehousing and Business Intelligence, Database Administration, etc.

数据库系统专业涵盖数据库管理系统的基本概念和应用，培养学生数据库技术理论和实践技能，应用于解决实际问题。例如数据仓库、商业智能、和数据库管理等。

### Specialty Courses/ 专业课程

- Relational Database Design  
数据库设计
- Advanced Database System  
高级数据库系统
- Introduction to Big Data Management  
大数据管理概论
- Information Retrieval and Text Mining  
信息检索和文本挖掘

### Career Opportunities/ 工作机会

- Data Engineer  
数据工程师
- Database System Administrator  
数据库系统管理员
- Database Designer  
数据库设计师
- Database Developer  
数据库开发人员

# Networks and Security

## 网络与安全

In this specialization, students will learn and practice the related-concepts of Computer Networks and Cybersecurity, such as, Local Area Networks and Network Management, Wireless and IoT Networking, Cloud Computing Systems, Services and Applications and Advanced Cybersecurity.

本专业的学生将学习和实践计算机网络和网络安全相关的概念，例如局域网和网络管理、无线和物联网、云计算系统、服务和应用程序、以及进阶网络安全。

### Specialty Courses/ 专业课程

- Cloud Computing Systems, Services and Applications  
云计算系统、服务、及应用
- Embedded Systems and Internet of Things  
嵌入式系统和物联网
- Advanced Cybersecurity  
进阶网络安全
- Internet of Things Security and Privacy  
物联网安全和隐私

### Career Opportunities/ 工作机会

- Computer Network Administrator  
网络系统管理员
- Cybersecurity Engineer  
网络安全系统分析师
- IoT Engineer  
物联网工程师

# Software Engineering

## 软件工程

The Software Engineering specialization focuses on a systematic approach to the development process, analysis, design, implementation, testing, maintenance, and quality assurance of software. Students will learn the fundamentals of software development such as requirements elicitation and analysis, software implementation, code review, automated software engineering tools and techniques, and software development lifecycle and methodologies such as Agile, Scrum.

软件工程专业侧重于有系统的软件开发过程、分析、设计、实施、测试、维护和质量保证的方法。学生会学习软件开发的基本知识，例如需求获取和分析、软件实现、代码审查、自动化软件工程工具和技术，以及软件开发生命周期和方法(如Agile和Scrum)。

### Specialty Courses/ 专业课程

- Practical Software Engineering  
实用软件工程
- Software Requirement Engineering  
软件需求工程
- Software Design and Modelling  
软件设计和架构
- Software Process and Quality Assurance  
软件流程和质量保证

### Career Opportunities/ 工作机会

- System Analyst and Designer  
系统分析师和设计师
- Software Engineer  
软件工程师
- Software Tester  
软件测试员
- DevOps Engineer  
开发运营工程师

# Health Information Technology

## 健康信息科技

This specialization focuses on applying information technology for developing health and healthcare applications to deliver quality care. Students will study fundamentals in healthcare systems, clinical information systems, management information systems in healthcare organizations, as well as information privacy and security in healthcare.

本专业侧重于应用信息技术来开发健康和医疗保健应用程序，以提供优质的护理。学生将学习医疗保健系统、临床信息系统、医疗保健组织中的管理信息系统以及医疗保健中的信息隐私和安全的基础知识。

### Specialty Courses/ 专业课程

- Introduction to Healthcare Systems  
医疗保健系统概论
- Information Technology for Healthcare Services  
医疗保健服务信息技术
- Information Models and Healthcare Information Standards  
信息模型和医疗信息标准
- Practical Healthcare Management  
实用医疗管理

### Career Opportunities/ 工作机会

- Healthcare IT Specialist  
医疗保健IT专家
- Healthcare System Administrator  
医疗保健系统管理员

# Interactive Multimedia Technology

## 交互式多媒体科技

The Interactive Multimedia Technology specialization focuses on the application of various multimedia technologies to create interactive systems to support a variety of fields, such as, art, education, entertainment, engineering, medicine, and science. Students will study essential topics including Computer Graphics, Digital Storytelling and Visual Design, Virtual Reality, etc.

交互式多媒体技术专业专注于使用各种多媒体技术来创建交互式系统，以支持艺术、教育、娱乐、工程、医学和科学等各个领域。学生将学习包括计算机图形学、数字叙事和视觉设计、虚拟现实等重要课程。

### Specialty Courses/ 专业课程

- Computer Graphics  
计算机图形学
- Digital Storytelling and Visual Design  
数字故事讲述和视觉设计
- Virtual Reality  
虚拟现实
- Technology for Game Development  
游戏开发技术

### Career Opportunities/ 工作机会

- 3-D Application Developer  
多媒体开发人员
- Game Developer  
游戏开发商
- Concept Art Designer  
概念艺术设计师
- Animator  
动画师

# Information System Management

## 信息系统管理

This specialization focuses on how to use information technology and information systems to support and improve the business processes of the organization. Students will study subjects related to Information Systems Management, Information and Business Process Management, Introduction to Experience Design, etc.

该专业重点关注如何使用信息技术和信息系统来支持和改进组织的业务流程。学生将学习信息系统管理、信息和业务流程管理、体验设计概论等专业科目。

### Specialty Courses/ 专业课程

- Information System Management  
信息系统管理
- Information and Business Process Management / 信息和业务流程管理
- Introduction to Experience Design  
体验设计概论
- Data Warehousing and Business Intelligence / 数据仓库和商业智能

### Career Opportunities/ 工作机会

- Business Analyst  
业务分析师
- IT/Digital Consultant  
数字顾问
- Solution Designer  
解决方案设计师
- UX/UI Designer  
用户体验/用户介设计师

# Artificial Intelligence

## 人工智能

This specialization in Artificial Intelligence covers the fundamentals and applied concepts of artificial intelligence in various field to solve practical problems. Students will learn core artificial intelligence subjects such as Introduction to Machine Learning, Deep Learning, Introduction to Natural Language Processing, Introduction to Computer Vision, etc.

人工智能专业涵盖了人工智能的基础知识和应用概念，可应用在各个领域解决实际问题。学生将学习核心人工智能科目，如机器学习概论、深度学习、自然语言处理概论、计算机视觉概论等

### Specialty Courses/ 专业课程

- Introduction to Machine Learning  
机器学习概论
- Introduction to Natural Language Processing  
自然语言处理概论
- Introduction to Computer Vision  
计算机视觉概论
- Deep Learning  
深度学习

### Career Opportunities/ 工作机会

- Data Scientist  
数据科学家
- Data Engineer  
数据工程师
- Machine Learning Engineer  
机器学习工程师

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