

**掌握资讯业
必备的专业知识和技能**
*To gain knowledge and skills needed to
work in the IT industry as a professional.*



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软件工程 物联网科技

SOFTWARE ENGINEERING
Internet of Things (SEIOT)

- » 80% 实践训练
80% Practical Skills
- » 20% 理论
20% Theory
- » 2+1 课程
2+1 Learning
- » 16岁以上即可报读, 无需入学资格
Entry Requirement: 16 Years Old & Above
- » 教学媒介语以中文为主, 英文为辅
Medium of Instruction: Chinese & Simple English



2+1 年课程

Years Course

本课程为因应资讯科技的迅猛发展及有以下意愿的学生而设：
This qualification was developed to keep pace with the fast changing information technology sector and for candidates who want :

- 在资讯与通讯科技 (ICT) 谋求职业发展。
Career progression within the Information and Communication Technology (ICT) industry
- 掌握资讯业必须具备的知识和技能，成为专业的IoT软件工程师、网络开发人员、流动应用程序开发人员、IoT系统架构师、网站开发人员等等。
To gain knowledge and skills needed to work in the IT industry as a professional IoT software engineer, mobile application developer, IoT system architect, web developer and etc.
- 引导学生掌握各相关技术，成为IoT解决方案架构师。
To equip participants with the range of skills to be an IoT Solutions Architect.

此两年制软件工程专业技职课程为学生提供实践知识如：物联网(IoT)编程、物联网传感器与设备、物联网网络与协议、物联网云端与大数据、物联网网络安全性与隐私性、物联网解决方案的建构、电脑编程与移动应用程式开发技能，提升学生的深造和就业机会。
The two-year Vocational Course in software engineering provides student with hands-on knowledge of Internet of Things (IoT) Programming, IoT Sensors and Devices, IoT Networks and Protocols, Cloud Computing and Big Data in IoT, Cyber security and Privacy in the IoT, Architecting IoT Solutions, computer programming and mobile application development skills to enhance their educational and employment opportunities.

学生将学习 / Students will learn and be able to:

- 依据用户的要求以及系统与技术规范，掌握软件及应用程式的设计、开发、测试、维护及记录文档程式代码。
Software and applications design, develop, test, maintain and document programme code according to user requirements and system and technical specifications.
- 在专业领域内形成物联网概念并设计物联网解决方案。
Generate IoT concepts and design IoT solutions within the area of expertise.
- 制定物联网解决方案的流程，并鉴定所需的传感器和其他设备。
Map out the process for an IoT solution, and identify the sensors and other devices required.
- 评估不同的基础架构组件和网络系统，并设计用于物联网的基本网络。
Evaluate different infrastructure components and network systems, and design the basic network for IoT.
- 识别和分析物联网安全和隐私风险，并初步设计安全的硬件和软件。
Identify and analyze IoT security and privacy risks, and concept design secure hardware and software.
- 制定可行的物联网概念设计，以解决问题，准备进行原型设计与测试，并鉴定进入市场的途径。
Produce a viable IoT concept design that solves a problem, is ready to prototype and test, and has an identified route to market.
- 用C#、安卓移动(Android mobile)、Java及iPhone/iPad、Objective C，在Windows视窗移动开发物联网移动程式。
Mobile IOT application development for Windows mobile using C#, Android mobile using Java, RxJava, Kotlin and iPhone/iPad using XCode, Objective C, Swift and etc.
- 物联网程式开发包含在三个关键方法中，即：PHP/MySQL, Java and C#.NET(ASP)。
Web IOT application development is included in three key approaches PHP/MySQL, Java and C#.NET (ASP).
- 用MySQL、物件导向分析与设计、面向对象程式设计(Object Oriented Analysis and Design)、开发数据库技术，以及用Visual Basic.Net, Java, C++开发基于Window视窗的应用程式等技术。
Skills in database development with MySQL, NoSQL, etc. Object Oriented Analysis and Design, and Window-based application development with Visual Basic.Net, Java, C++ and etc.
- 涵盖Hadoop的IoT大数据技术。通过Python学习数据科学。
IOT Big Data Technologies with Hadoop. Data Science with Python.
- 标记语言、网页设计、脚本、客户端编程、服务器端编程及数据库集成等。
Markup languages, web design, scripting, client-side programming, server-side programming, database integration and etc.

课程内容 / Course Outline

YEAR 1 第一学年

第一学期 / Semester 1

- 编程概论
Introduction to Programming
- ICT实务技能
Practical ICT Skills
- 操作系统(Linux)
Operating System (Linux)
- 软件工程概论
Introduction to Software Engineering
- 职场英语 (1)
Workplace English communication (1)

第二学期 / Semester 2

- 资讯科技与社会
IT and Society
- 管理资讯系统
Managing Information Systems
- 电脑网络
Computer Networking
- 数码影像
Digital Imaging
- 系统分析与设计
Systems Analysis and Design
- 以Java编写物件导向程式
Object-oriented Programming using Java

第三学期 / Semester 3

- 以C++进行物件导向程式设计
Object-oriented Programming using C++
- 网络安全
Cyber Security
- 人机互动(HCI)
Human Computer Interaction (HCI)
- 网页设计(HTML 5, Java Script & XML)
Web Design and Development (HTML 5, Java Script & XML)
- 电脑技术创新
Innovative Technologies in Computing
- 与工作相关的软技能
Work-based Soft Skills

YEAR 2 第二学年

第四学期 / Semester 4

- 网页应用程式开发(PHP)
Web Application Development (PHP)
- 数据库管理系统(MySQL, NoSQL)
Database Management Systems (MySQL, NoSQL)
- 移动应用程式开发 - Android(安卓) (RxJava & Kotlin)
Mobile Application Development - Android (RxJava & Kotlin)
- 软件开发方法论
Software Development Methodologies
- 电子商务应用
E-Commerce Applications
- 职场英语 (2)
Workplace English communication (2)

第五学期 / Semester 5

- 数据结构与算法
Data Structures and Algorithms
- 物联网基础
IoT Fundamental
- 以C#进行物件导向程式设计
Object-oriented Programming using C#
- 使用Python进行物联网编程
IoT Programming with Python

第六学期 / Semester 6

- 移动应用程式开发 - iOS (Objective-C和Swift)
Mobile Application Development - iOS (Objective-C and Swift)
- 物联网云端与分析
IoT Cloud and Analytics
- 物联网网络安全与隐私
Cybersecurity and Privacy in the IoT
- 物联网系统开发 (毕业制作)
IoT Systems Development (Major Project)

* Please note that the modules listed are indicative and may be subject to change.

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All learning materials are designed and written by expertise in the field and professional academic authors so that each interactive module is aligned against specific learning criteria specified by OFQUAL, the defining UK Government body for Academic Standards in UK Higher Education. These standards ensure those that learn with us receive a high quality education along with certification that is recognised universally by Universities and employers.



评估标准 / ASSESSMENT

100%作业及实践练习，本课程提供物联网科技的理论20%与实践80%，聚焦于工作场所的实际应用。鼓励团队合作，让学生学会分组合作或单独工作以完成专题作业。

100% Assignment and Practical Exercises. The course offers both the theory (20%) and practice (80%) of Software Engineering with Internet of Things (IoT) skills, with a focus on the practical application of these skills in the workplace. Teamwork is encouraged and students learn to work in groups to complete their projects.



考取资格 / QUALIFICATIONS

英国国立西苏格兰学院专业文凭和专业高级文凭
Diploma and Advanced Diploma awarded by West College Scotland, UK

台湾文凭(由台湾各大学颁发)
Diploma Qualification from Taiwan University

第五级专业文凭(资格获得OFQUAL英国政府学历及考试评审局承认)[选择性]
Level 5 Diploma (Regulated by OFQUAL - Office of Qualification & Examination Regulation) [Optional]



就业前景 / CAREER PATHWAYS

物联网软件工程师、自动化科技软件工程师、软件工程师、软件系统分析师、互联网应用程序工程师、软件设计开发工程师、数据库软件工开发工程师、软件测试工程师、移动应用程序工程师、系统架构师、主程式员、网页设计师、多媒体软件工程师、IT项目经理等等。

IoT Software Developer, Software Developer for Automation Technology, Software Engineer, Systems Analyst, Web Programmer, UI Software Developer, Database Developer, Software Testing Engineer, Mobile Application Engineer, Systems Architect, Team-Lead Programmer, IT Developer, Web Application Developer, Web Designer, Multimedia Software Engineer, IT Project Manager, etc.