

## MSc in Software Development: International Systems

Targeted at students with a non-software-development background - this course provides students with the opportunity to combine their previous studies and experience with the skills, technical knowledge and expertise required to participate in building high-quality software systems for international markets. The course leverages two core competencies of the University: Software Engineering and Software Localisation.

Aligning itself with the software engineering competency, the course emphasis is on software development knowledge and skills;

Aligned with the software localisation competency, this development knowledge will be augmented with a knowledge of the techniques employed to create systems for different locales/markets and transforming already-existing systems to new locales.

As a student on this programme you will:

- Combine your prior knowledge and skills, with software development knowledge and skills, to enable you to develop software systems in a wide range of domains of expertise;
- Learn to appreciate the subtleties of developing variants of software for individual locales and develop those variants;
- Be capable of researching new trends and approaches in software development and software internationalisation autonomously, after you leave the course.
- Contribute to the ongoing expansion of Ireland's software development/software localisation sectors.

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# MSc in Software Development: International Systems

## Autumn Year 1

Module	Description
CS5731 – Philosophy of Research	These modules serves as an introduction to the nature of research (philosophies, paradigms and theories) and the reasons for research investigations. It covers the topics of literature review, critical evaluation of research material, the subsequent identification of research questions and the full specification of these questions, in the form of a research proposal.
CS6371 – Initial Programming	Provides a language independent introduction to programming using one programming language and identify the utility of programming for simple problems in a range of domains. The programming language and its operating environment is selected by the Department and the selection is reviewed regularly.
CS5707 - Software Engineering Development Paradigms	Provides an overview of a range of software development paradigms or approaches ranging from very heavy-duty formal processes to ad-hoc informal 'anything goes' approaches, with a recent category of agile approaches, trying to address the middle ground.
CS6381 - Best Practice Software Internationalisation	Software internationalisation is the study of the transformation of software systems for usage in new locales with different languages and cultures. This module prepares students for the internationalisation of software systems. It identifies the cultural/language issues that may arise in different locales and presents students with best-practices in internationalisation to address these issues (both at a theoretical level and at a practical level through, for example, the use of APIs). Thus it provides students with the skills and insights to reason about and internationalise systems appropriately.
CS6361 - Language Engineering and Translation Theory	This module prepares students for the implementation and use of such applications. It outlines the fundamental principles of natural language processing as well as major types of translation technology. It also identifies challenges that arise in the development and implementation of translation technology. Thus, it provides students with the skills and insights to evaluate translation technology and implementation strategies to address the technology's limitations.

# MSc in Software Development: International Systems

## Spring Year 1

Module	Description
CS6402 – Intermediate Programming	Starting from the foundations laid out in Initial Programming this module progresses to classical algorithms, data structures, and more advanced programming constructs, for application to problems from a range of domains. Likewise, students will employ modular design, software reuse and the object oriented concepts of inheritance, encapsulation and polymorphism, to solve such problems.
CS4082 - Introduction to Web Development	This module will introduce students to the concepts and techniques underlying the World Wide Web, such that they will gain a working knowledge of how to structure and build websites. Students will be given a preliminary introduction to databases and SQL in order to create dynamic, data-driven web applications.
CS5702 - Software Engineering Requirements	This module aims to provide students with a critical awareness of the inherent challenges and barriers to success in the engineering of requirements in addition to the knowledge and skills to elicit, document, verify, validate and manage software requirements in a variety of development situations.
CS5705 – Software Engineering Human Computer Interaction	As computer technology is becoming more ubiquitous and consumer-orientated, the need for understanding users and the contexts of use is becoming increasingly important. HCI is about the design of technologies that are safe, easy to learn and use, efficient, and provide the user with a positive experience of use.
MS5052 - Quantitative Research Methods	The module will prepare students in presenting statistical research findings in scientific journals, critiquing research finding from scientific journals, and responding to statistical criticisms from referees and editors.

# MSc in Software Development: International Systems

## Autumn Year 2

Module	Description
CS5721 - Software Design	The rationale for the inclusion of the Software Design module is to equip students with the fundamental knowledge and skills necessary to design quality object-oriented software. The emphasis is on the support of functional requirements using data driven design, with limited reference to architectural concerns, primarily in the form of architectural patterns. The focus is on programming in the small, modular decomposition, interfaces, Object-Oriented Analysis and Design (OOAD), and The Unified Modelling Language (UML).
CS6113 - Translation Technology Systems	This module prepares students for the integration of different translation technology in complex processes. It outlines the principles of process modeling and typical processes and hand-off points between tools. It also identifies challenges to interoperability that arise as well as solutions currently in use.
CS4416 - Database Systems	This module introduces Databases and DBMSs so that students can leverage them in software development. It introduces students to their classification, and structures and to generic skills required to create and manipulate appropriate Database instances, for a selection of problems in a range of application domains.
CS6123 - Dissertation Part 1	The core aim of the module is to facilitate students deriving a defensible research position. That encompasses reviewing and critically evaluating academic literature in their chosen area, identifying research gaps/omissions, and possibly probing unprobed relationships between existing theories. It also encompasses explicit defense of this research position through presentation of a written report that declares the research position and explains its derivation from the literature.

# MSc in Software Development: International Systems

## Spring Year 2

Module	Description
CS4084 - Mobile Applications Development	The module will focus on the tools and environments that exist to help developers create real world applications that run on wireless and mobile devices. A strong emphasis will be placed on providing students with hands on experience in the programming and testing of applications for mobile devices. Throughout this module students will use an object oriented programming language, basic APIs and specialised APIs to develop applications for mobile devices.
CS5703 - Software Quality	This module will give students an understanding of: <ul style="list-style-type: none"><li>• Management of software quality</li><li>• Software Process Quality</li><li>• Software Product Quality</li><li>• Quality issues during the development of software</li><li>• Measurement techniques for monitoring software quality</li></ul>
CS6124 - Dissertation Part 2	The core aim of this module is to allow students to provide and present evidence in evaluation of the research position they derived in the Dissertation 1 module. This evidence can be in the form of, for example, an empirical study where the student will design and perform an evaluation of their position, reporting on the results and how they align with their initial research position. Alternatively the evidence could be in the form of prototype software that embodies a novel approach, and the efficacy of the approach evaluated.