MSc Program
in Network and e-Business Centred Computing

Objectives of the programme:

- To prepare the future professionals for the digital economy to be capable of understanding the technical underpinnings and business opportunities of the new economy.
- To provide in-depth study and training encompassing state-of-the-art principles and techniques in students chosen specialist e-business route. This is provided through having a set of in-depth specialist modules.
- To provide students with research and development skills through a substantial 6-month research and development project undertaken in one of the participating institutions.
- To provide the students with an opportunity to study in a multi-cultural environment sharing knowledge with other students from different background.

Syllabus:

Term 1: University of Reading (UoR)

SEMC01: Advanced Operating Systems & Programming in Unix
SEMC02: Network Computing
SEMC03: Computer Architectures
SEMC05: Internet Software Environments
SEMC06: Transferable Skills

Term 2: Aristotle University of Thessaloniki (AUTh)

SEMC51: Human-Computer Interaction
SEMC52: Computational Intelligence and e-Business
SEMC53: Data bases and knowledge mining
SEMC54: Introduction to e-Business
SEMC55: Managerial Accounting and Legal Issues in e-Business

Term 3: University Carlos III of Madrid (UC3M)

SEMC61: Network Infrastructure
SEMC62: Network Programming
SEMC63: B2B Technologies
SEMC64: B2C Technologies
SEMC65: Network Security and Electronic Payment

Term 4: Project placement, which can take place in Trinity College Dublin or any of the other universities.

Studentship:

For students who are not EU citizens, there is full studentship of 30,000 Euro in total. The stipend covers fully the fee of 14,000 Euro and living costs up to 16,000 Euro.

The **deadline for application** is 15 March 2005.

To apply you have to submit filled Application form with CV and proof of previous degree – transcript, or document stating expected results if you are finishing later this year.

The documents have to be submitted via post or e-mail to:

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Course Syllabus Overview:

Term 1: University of Reading (UoR)

SEMC01: Advanced Operating Systems & Programming in Unix

Aims: To introduce the student to programming on Unix Systems. The student will learn the general issues of the Unix system and how to use them to build adequate and efficient programs. The student will learn how to program shell-scripts, how to program in C using all the facilities Unix can offer. Furthermore, the student will also learn to program network applications in a client/server way.
Credits: 5 ECTS
Assessed: Coursework 100% (individual project)

SEMC02: Network Computing

Aims: To provide background in computer networks, from both the hardware and software perspectives: communication standards and protocols, network hardware. Introduce the client-server model and remote procedure calls. To introduce the cluster computing techniques and concepts of load balancing and resource management in cluster environments. To present the concept of the Computational Grid and the corresponding advanced concepts of Grid computing, drawing examples from Globus toolkit etc. Outlining the concept of Virtual Organization and how the Grid paradigm can be used to build Virtual Organizations.
Credits: 5 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project)

SEMC03: Computer Architectures

Aims: To introduce the basic concepts of computer architecture and organisation in order to allow computational scientists to recognise when programs are not as efficient as they could be and to be able to transform them so that they can make better use of the underlying machine. The lectures give enough knowledge on the recent structures such as pipelined and superscalar processors, cache based programming, SIMD and MIMD principles used in solving DSP problems. Students will be able to recognise when the program is not performing near the capacity of the system, to understand performance improvement techniques recommended by the compiler writers and/or system architects and decide whether the benefits of increased performance are worthy of satisfying abstraction and portability.
Credits: 5 ECTS
Assessed: Exam 70% (closed book – only listed lecture notes allowed);
Coursework 30% (individual project)

SEMC05: Internet Software Environments

Aims: To introduce students to network centred software environments, specifically the Java programming language and the Java platform, and to illustrate the application of these environments though the design and development of a small-scale practical system.
Credits: 5 ECTS
Assessed: Coursework 100% (individual project)

SEMC06: Transferable Skills

Aims: To introduce the student to the main elements of Personal effectiveness, Interpersonal skills and Project Management. To highlight the importance of personal and interpersonal skills such as communication, flexibility and self-learning, information handling and equip the students to effectively communicate, present orally their work and write varied research documentation. This is linked to the introduction of teamwork through management games in planning and decision making.
Credits: 5 ECTS
Assessed: Coursework 100% (report – 30%, literary review – 20%; oral presentation - 50%)

Term 2: Aristotle University of Thessaloniki (AUTh)

SEMC51: Human-Computer Interaction

Aims: The basic aim of this module is to introduce the student to the physics of human perception, cognition and interaction with machines and how these are influenced by multimodal computer presentation of information and knowledge.
Credits: 5 ECTS
Assessed: Exams 50% Exams, 50% Coursework (team project)

SEMC52: Computational Intelligence and e-Business

Aims: To construct physically instantiated or embodied systems that can perceive, understand, interact with their environment and evolve in order to achieve human-like performance in activities requiring context-specific knowledge.
Credits: 5 ECTS
Assessed: 100% Coursework (presentation and examination on project work)

SEMC53: Data bases and knowledge mining

Aims: To introduce the students to the advanced Data Mining technology and demonstrate its use in discovering knowledge and data related with the activities of the various business sectors.
Credits: 5 ECTS.
Assessed: 50% Exams, 40% Coursework (two case study assignments), 10% Lab work (use of data mining tools)

SEMC54: Introduction to e-Business

Aims: To make the student knowledgeable on the strategies and procedures used in e-business and inform him or her on Web-based architectures and the underlying technologies used for e-business applications.
Credits: 3 ECTS
Assessed: 70% Exams, 30% design presentation

SEMC55: Managerial Accounting and Legal Issues in e-Business

Aims: To make the student aware of business organization issues, the law environment in which business operate and the decision taking mechanisms
Credits: 2 ECTS
Assessed: 50% Exams, 50% case study presentation

Term 3: University Carlos III of Madrid (UC3M)

SEMC61: Network Infrastructure
Aims: To present how to achieve ***communication*** in e-Business. To present the requirements that e-commerce applications impose to the underlying network infrastructure. The student will learn how to configure the typical services offered by Internet Service Providers (ISPs), how to provide and manage Quality of Service (QoS) in IP networks and how these networks are going to evolve in the short, medium and long terms.
Credits: 4 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project).

SEMC62: Network Programming
Aims: To present how to handle ***behaviour*** in e-Business. To provide the student with the basic knowledge about the programming languages used in the Internet. To present the main Java technologies in the Internet (J2SE, J2EE, JavaScript).
Credits: 4 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project).

SEMC63: B2B Technologies
Aims: To present how to achieve ***interoperability*** in e-Business. To present the main technologies and languages used in Business to Business e-commerce applications (EDI, XML, Web Services, etc.). To introduce the platforms based on application servers for Business to Business e-commerce applications. To introduce the main e-government concepts, technologies and projects and their repercussions to the B2B environment.
Credits: 4 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project).

SEMC64: B2C Technologies
Aims: To present how to handle ***presentation*** in e-Business. To present the main technologies used in Business to Consumer e-commerce applications. To give an overview about programming user personal devices for e-commerce applications. To present the main technologies related to CRM systems. To introduce how to build an electronic shop including dynamic content generation and user interaction issues.
Credits: 4 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project).

SEMC65: Network Security and Electronic Payment
Aims: To present how to achieve ***trust*** in e-Business. To examine the security threats and vulnerabilities present in IP networks and their effect in e-commerce servers. To study the current security countermeasures, mechanisms and services and their future trends. To introduce the main e-payment techniques and standards.
Credits: 4 ECTS
Assessed: Exam 70% (closed book); Coursework 30% (team project).