

# Erasmus Mundus MSc in Network and e Business Centred Computing

## For students entering in 2008

Awarding Institutions:	The University of Reading, Aristotle University, Thessaloniki University Carlos III, Madrid
Teaching Institutions:	The University of Reading, Aristotle University, Thessaloniki University Carlos III, Madrid
Faculty of Science	Programme length: 18 months
Date of specification:	September 2007
Programme Director:	Prof. Vassil N. Alexandrov
Board of Studies:	MSc in Network and e Business Centred Computing
Accreditation:	Not applicable

### Summary of programme aims:

- 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.

**Transferable skills covered** are personal effectiveness, interpersonal skills, teamwork, technical communication (oral and written) and interview techniques, project management, self-management, risk assessment, efficient deployment of software tools, computer systems evaluation, marketing and business awareness for the streams with more business orientation as well as research and technical writing skills.

### Programme content

#### CORE MODULES

		<i>ETCS</i>	<i>Level</i>
SEMC1A	Advanced Programming on UNIX	5	M
SEMC02	Network Computing	5	M
SEMC03	Advanced Computer Architecture	5	M
SEMC05	Internet Computing Environments	5	M
SEMC06	Transferable Skills	5	M

#### MODULES taught in Aristotle University

		<i>ETCS</i>	<i>Level</i>
SEMC51	Human – Computer Interaction	5	M
SEMC52	Computational Intelligence and e Business	5	M
SEMC53	Databases and Knowledge Mining	5	M
SEMC54	Introduction to e-Business Technologies	5	M

#### MODULES taught in Carlos III University

		<i>ETCS</i>	<i>Level</i>
SEMC61	Network Infrastructure	5	M
SEMC63	B2B Technologies	5	M
SEMC64	B2C Technologies	5	M

SEMC65	Network Security and Electronic Payment	5	M
<b>MODULES taught in any of the four universities</b>		<i>ETCS</i>	<i>Level</i>
SEMC8A	Dissertation Project	30	M

### **Part-time**

Currently there is no part-time provision.

### **Modular arrangements**

This is a modular program of one week long modules by design, consisting of term of four core modules 20 ECTS and two stream terms of 5 modules 20 ECTS each. Currently there are no options offered. A week module consists usually of 30 contact hours lectures/practicals (labs) and expects overall work from the student worth 5 ECTS.

The Dissertation Project module is long 24 weeks and is worth 30 ECTS.

### **Progression requirements**

Continuation to the project stage is determined by the Board of Examiners in accordance with the University Framework for Postgraduate Courses and Multilateral Agreement for Collaboration, where the requirements to qualify for an award of MSc Degree (90 ETCS), achieving 60 ETCS (average mark of 50% or more with at least 40% in modules worth 15 ECTS (but not exceeding 5 ECTS per term) in the taught modules); from the taught part and 30 ETCS from the Dissertation (average mark of 50% or more);

### Mark Interpretation

50 - 100% Good standard (Pass)

0 – 49% Unsatisfactory Work

To pass the MSc students must gain an average mark of 50% or more overall with at least 40% in modules worth 15 ECTS (but not exceeding 5 ECTS per term) in the taught modules and gain a mark of 50% or more on the Dissertation.

### **Summary of teaching and assessment**

#### **Teaching/learning methods and strategies**

Acquisition of knowledge is achieved through lectures, practicals and seminars. More advanced knowledge and concepts is gained based on the above techniques and through teamwork, team projects, and individual projects and directed and self-paced study and learning.

#### **Assessment**

Assessment methods are specified for each module. These are exams, project assignments, oral presentations and dissertation.

#### **Admission requirements**

Entrants to this programme are normally required to have obtained:

**First Cycle Degree in Sciences, e.g. BSc, BEng or other:** A good honours degree with sufficient mathematical content and computing experience or equivalent qualification and background. Typically, graduates in Computer Science, Cybernetics, Engineering, Mathematics and Physics, or in joint Mathematics/Computer Science will be acceptable.

**First Cycle Degree with non-science background or** Graduates in other disciplines may be admitted to the programme if their level of computing experience is assessed by the programme

leaders as being sufficient to undertake the relevant stream of the programme, e.g. depending on the level of programming experience the applicants have. Applicants with a good degree in Economics, Business related studies, Law, Psychology or Pedagogies or equivalent qualifications and background as approved by the consortia are acceptable.

**In more detail we evaluate:**

- The grade of their first cycle degree (at least 70% of the scale used to mark academic performance in the University that issued the degree). The equivalent standard will be expected from students with different backgrounds.
- The grades on courses of the first cycle curriculum that are associated with the content of the postgraduate program
- The grade of the candidate's undergraduate dissertation
- Professional or research experience relative to the content of the postgraduate program
- Two reference letters
- Publications in refereed journals (where appropriate)
- Results of a personal interview
- Proven good command of the English language (the Cambridge Certificate of Proficiency, or IELTS 6.5 or equivalent TOEFEL score)

Admissions Tutor: To be appointed by the Board of Studies of the MSc in NeBCC.

**Support for students and their learning**

The support at University of Reading, for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme.

Student guidance and welfare support is provided by Programme Directors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

Student support during the terms taught away from Reading is handled by the teaching institution on place.

**Career prospects**

The program is an example of the collaboration with industry in creating a model ICT curricula through the Career Space consortium ([www.career-space.com](http://www.career-space.com)). It is focused towards following job profiles: *Software Architecture and Design, Systems Specialist, Communications Network Design, Software & Applications Development, Multimedia Design, Data Communications Engineering, IT Business Consultancy, Product Design.*

**Opportunities for study abroad or for placements**

This is a joint degree and as such the students are required to have period of studies at least in three out of four institutions in the Consortium.

All the students are enrolled on the programme in Reading.

- During the first term (3 months) students take the core modules worth 25 ECTS and are examined on these modules at UoR.
- They move to Greece to take the second set of modules (3 months) worth of 20 ECTS and examined on these modules at AUTH.
- At the third term (semester) they are in Madrid for 3 months and take modules worth of 20 ECTS credits and examined at UC3M.

- After the taught part the students start 24 weeks (6 months) project to be completed with a Dissertation. The students can take the project in any of the partners of the consortium depending on the project.

### **Educational aims of the programme**

The Erasmus Mundus MSc program in Network and e Business Centred Computing takes a net-centric approach and aims to teach the students of the new way to conduct multidisciplinary research and business oriented design, focusing on Network Computing and Communication, e Business, and Software Engineering & HCI.

**Acquired Competences and Learning Outcomes:** The programme gives advanced knowledge from the computing area through the core modules and complements the general technology issues of the network computing on one side and the business issues on the other side with set of specialized modules.

These modules provide the student with:

- (a) advanced in dept knowledge in the area of Networking and some Architecture and Programming issues.
- (b) theoretical and practical knowledge on how to build human-computer interfaces on a network computing environment that can influence the user because the design is based on knowledge on the perception and cognition abilities of the human.
- (c) knowledge and tools for developing intelligent mechanisms for user searching and processing data and knowledge with the purpose of predicting sales, customer trends and financial cash flows.
- (d) theoretical knowledge on how to organize and conduct business electronically and practical knowledge on how to implement e-business applications.

### **Programme Learning Outcomes**

#### ***Knowledge and Understanding***

<p><b>A. Knowledge and understanding of:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Understanding how to solve complex business problems in a networked environment</li> <li><input type="checkbox"/> Algorithmic thinking, advanced models of computation, analysis of algorithms, techniques for its estimation and measurement, existence of intractable problems</li> <li><input type="checkbox"/> Knowledge of advanced programming and communication techniques for networked architectures</li> <li><input type="checkbox"/> Knowledge of Web based systems and building Web applications</li> <li><input type="checkbox"/> Multimedia data technologies</li> <li><input type="checkbox"/> Network security</li> <li><input type="checkbox"/> Specific body of e-business related knowledge through specialized modules.</li> </ul>	<p><b>Teaching/learning methods and strategies</b></p> <p>Acquisition of knowledge is achieved through lectures, practicals and seminars. More advanced knowledge and concepts are gained based on the above techniques and through teamwork, team projects, and individual projects and directed and self-paced study and learning.</p> <p><b>Assessment</b></p> <p>Assessment methods are specified for each module. There are exams, project assignments, oral presentations and Dissertation.</p>
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## *Skills and other attributes*

<p><b>B. Intellectual skills – able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Integration of Theory and practice</li> <li><input type="checkbox"/> Critical evaluation of software environments, their limitations and suggest improvements</li> <li><input type="checkbox"/> Synthesise information from data for decision making</li> <li><input type="checkbox"/> Advanced decision making</li> <li><input type="checkbox"/> Demonstrate skill necessary to plan and conduct advanced research</li> <li><input type="checkbox"/> Demonstrate ability to understanding and explain advanced concepts, principles and theory related to Network Centered Computing and Computing Applications in e-business</li> </ul>	<p>→<b>Teaching/learning methods and strategies</b></p> <p>Project work, tutorials, seminars and coursework assignments. Open-ended project work is permitting the students to demonstrate the achievements of all learning outcomes in this category.</p> <p><b>Assessment</b></p> <p>Through formal examination, coursework and practical and project work. Methods for assessment are: research reports, essays, oral presentations open and closed book examination.</p>
<p><b>C. Practical skills – able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Critically evaluate the problems and choose appropriate methods and algorithms for their efficient solution.</li> <li><input type="checkbox"/> Applying advanced methods and techniques for solving complex problems</li> <li><input type="checkbox"/> Use advanced theories and concepts to explain complex processes</li> <li><input type="checkbox"/> Manage practical projects efficiently</li> <li><input type="checkbox"/> Consider and analyse the problem to be solved from multidisciplinary point of view.</li> <li><input type="checkbox"/> Efficiently deploy appropriate theory, practices and tools for the design, evaluation and implementation of computer systems</li> </ul>	<p><b>Teaching/learning methods and strategies</b></p> <p>Practical skills are developed through a practical project work, tutorials and course work assignments. Especially the open-ended project and practical work is designed to permit students to show achievement of all the learning outcomes in this category.</p> <p>The skills are taught embedded as integral part of various modules.</p> <p><b>Assessment</b></p> <p>The skills are assessed via the course work assessment as parts of the mark are awarded for achieving a level of skill appropriate for a postgraduate student (as recommended by the professional bodies in the field).</p>

<p><b>D. Transferable skills – able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Capacity to learn intensively</li> <li><input type="checkbox"/> Capacity to communicate efficiently by written and verbal means</li> <li><input type="checkbox"/> To write research reports and papers</li> <li><input type="checkbox"/> To do efficient search of information and select the relevant one.</li> <li><input type="checkbox"/> Problem solving skills</li> <li><input type="checkbox"/> Ability to work as part of a team</li> <li><input type="checkbox"/> Ability to work independently</li> <li><input type="checkbox"/> Project planning and time/task management through individual/team project</li> </ul>	<p><b>Teaching/learning methods and strategies</b></p> <p>A separate module on Transferable Skills which includes lectures, practical exercises, formal oral presentations and written assignments. These skills are further developed throughout the programme through assignments, team projects and team work as well as tutorial and seminar work.</p> <p><b>Assessment</b> Coursework assignments, Essays, Technical Reports, Seminars and Formal Presentations.</p>
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**Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance processes or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.**