



MAGnUS Training Course

University of Derby
UK

July 1st – 4th, 2019



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Erasmus+ Programme
of the European Union

EU Partners



ipt
Instituto
Politécnico
de Tomar



TALLINN UNIVERSITY OF
TECHNOLOGY

Partners - Russia & Azerbaijan



Astrakhan State University



Voronezh State University



Baku Engineering University



Wider Objective

- To Share best practice of MSc Design
- From QAA Benchmark Statements
- Through Programme Learning Outcome Statements
- To Module Learning Outcome Statements

- Validation Documentation – What is it?
- How is it structured?
- Validation Events



Strapline:

“I looked through your program MSc Mobile App Development and Computer Games courses. I think it is just a fine example of what we want to develop”.

Yana Demyanenko

Associate professor of
Institute of Mathematics, Mechanics and Computer Science,
Southern Federal University, Russia.



Objectives

- To develop double diploma interdisciplinary Master curriculum in Mobile applications and Game Design with regard to labour demands and Bologna provisions at Russian and Azerbaijan universities.

To enhance professional skills of teachers

To embed a comprehensive and crosscutting QA system

To set up a joint enterprise-university game lab/studio

MAGnUS at Derby

The role of UoD in MAGnUS

[needs analysis](#) to ensure that new programmes will meet the needs of modern business environment

The EU partners will [present trends](#) in mobile and game development.

– DAY 2

and 3

❖ best European practices for both [programme development](#) and [project management](#).

❖ study of the practices of modular programme design

– DAY 2

❖ Teaching & Learning Methods

- DAY 4

The Magnus Team @ Derby

Carlton McDonald

- ❖ 1997 – 2017 Head of Operations Stage 1 Joint Honours Scheme
- ❖ 2014 – 2016 Acting Deputy Head of Dept. Computing and Mathematics
- ❖ 2017 – Departmental Partnership Lead

Dr. Chris Windmill (...)

- ❖ Programme Leader Computer Games Programming

Rob Moon

- ❖ Business School, Entrepreneurial Lecturer

Ovidiu Bagdasar

- ❖ Computational Mathematics, PL MSc Big Data Analytics, Erasmus coordinator

**Quality
Assurance
Agency
(QAA)**



Subject Benchmark Statements

describe the nature of study and the academic standards expected of graduates in specific subject areas.

They show what graduates might reasonably be expected to **know**, **do** and understand at the end of their studies.

QAA **Masters** Subject Benchmark Statements

Architecture (2010)

Business and Management (2015)

Chemistry (2014)

Computing (2011)

Counselling and Psychotherapy (2013)

Criminology (2014)

Dentistry (2002)

Dietetics (pre-registration) (2017)

Engineering (2015)

Forensic Science (2012)

Librarianship, Information, Knowledge, Records and Archives Management (2015)

Mathematics, Statistics and Operational Research (MMath) (2015)

Medicine (2002)

Optometry (2015)

Pharmacy (MPharm) (2002)

Physics (2008)

Veterinary Science (2002)



Computing Subject Benchmark Statement

produced by a group of subject specialists in 2011!!

Council of
_____ and
_____ of
Computing (CPHC)



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Quality

Subject benchmark statement

Master's degrees in computing
2011

“Subject benchmark statements also provide support to HEIs in pursuit of internal -----.

“They enable the learning outcomes specified for a particular programme to be ----- and ----- against agreed general expectations about standards”.

Preface

Flexibility

Subject benchmark statement

Master's degrees in computing
2011

“Subject benchmark statements allow for ----- and ----- in programme design and can stimulate **academic** ----- and debate upon the content of new and existing programmes within an **agreed overall -----**”.

Preface

Choosing a Course



Choosing a Course

Is it theoretical, practical?

Structure

Placements, Internships

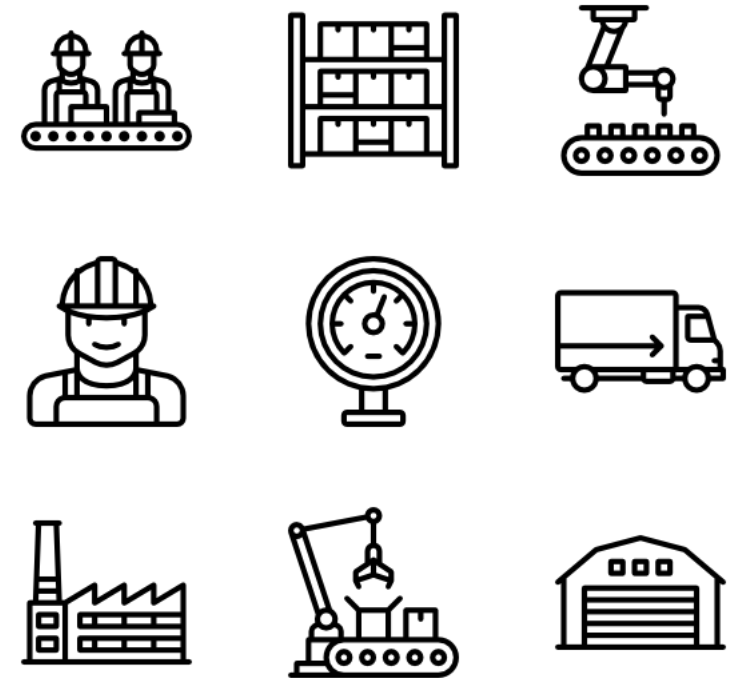
What Options exist

Teaching and Learning
Methods

■ ■ ■ ■

Discretion

the requirements of
-----, statutory or
regulatory bodies will
be a matter for
individual HEIs to
consider in detail.



Consider your local or national context.

Bologna Process

The Bologna Process is intended to promote **student** and **staff** ----- across Europe and to enhance the attractiveness of European higher education worldwide.

To create a European Higher Education Area by **20__**.

Computing Foundational Issues

- ----- considerations intended to ensure a sound logical basis for the discipline; complexity issues which address feasibility and efficiency concerns; the existence of formal aspects which facilitate automation
- principles of ----- languages, compilers and programming environments
- the concept of the algorithm, the concept of a -----, and notions of -----
- ideas of ----- and design, applied in the context of the domain knowledge associated with particular applications and linked to -----
- life cycle and process concepts
- professional, legal, -----, cultural and ----- concerns

Major Technologies

- techniques associated with ----- construction and development, including the development of socio-technical systems
- electronic/chip design and system level -----, including bio-inspired developments
- computing systems, including multi-core processors and their exploitation; parallel and vector processing systems; distributed systems, ----- computing, quantum computing and grid computing
- pervasive computing, including networks, the internet, ----- computing systems and social networking systems; the ----- with telecommunications and the exploitation of modern communication systems

Major Technologies continued...

- the **human computer interface** - embracing matters such as -----, usability in its broadest sense, personalised systems, concern for users with some form of disability, and generally applications of ubiquitous and ambient computing and their effects on user environments and behaviour
- methods and techniques for **information -----**, based around sound principles for updating and maintaining information
- appropriate awareness of techniques to address concerns for -----, **integrity** and -----

MSc Computing Sub- disciplines 2011

Master's degrees in computing/IT may be designed to cover a particular specialism or sub-discipline within computing in greater detail:

- computer graphics,
- information management,
- -----,
- computer security,
- communications and networking,
- computing systems architectures,
- the internet,
- --- science,
- ----- computing,
- data warehousing,
- aspects of _ _
- human computer interaction.

MSc Computing Sub- disciplines 2020



Master's degrees in computing/IT may be designed to cover a particular specialism or sub-discipline within computing in greater detail:

- computer graphics
- information management
- digital media,
- computer security
- communications and networking
- computing systems architectures
- the internet
- web science
- mobile computing
- data warehousing
- aspects of artificial intelligence
- human computer interaction

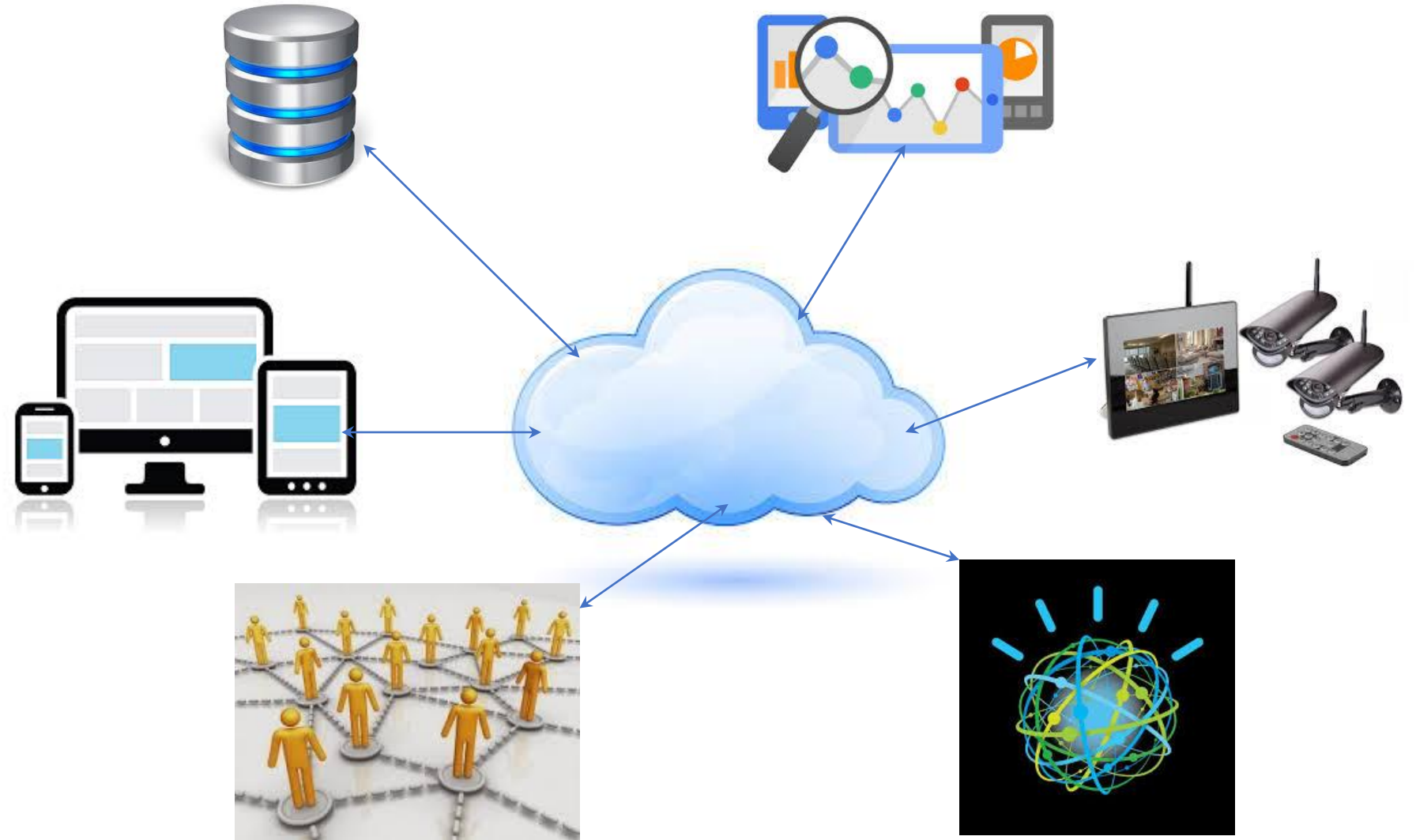
9 years later what other sub discipline areas have emerged?

IBM Technologies: 2015 - 2020

- Cloud
- Analytics
- Mobile
- Social Media
- Security
- Cognitive



Cloud at the heart...



Nature

master's degrees may be based on specific applications of underlying knowledge and understanding:

- the use of **modern up-to-date** ----- (languages, compilers, databases, tools, web-based software), which is essentially **current and new** -----
- using **modern** ----- in new applications
- **Some Examples...**
- addressing a range of applications focused on particular ----- **opportunities**
- a software life cycle focus, for requirements, the evolution of **software** ----- and **maintenance**.

MAGnUS Objectives: Generalist & Specialist MSc

Both must:

Focus on employment needs

Build on related computing bachelors elements
(not necessarily computing degrees)

Discussion on Partner Bachelors – **What is popular?**

MAGnUS Objectives: Generalist & Specialist MSc

Specialist

- Deeper
- Ground Breaking
- State of the Art

Generalist

Broader

Develop cross disciplinary insights, dependencies and links

MSc. Programme Design (QAA p8)

- the topic and learning outcomes captured in **the title** of the award
- carefully designed for the required **entrance qualifications**
- relevant theoretical underpinnings, **----- aspects** of a subject which do not change
- the curriculum demonstrates an integration between **theory and practice**, attitudes and an appreciation of a range of applications and their impact on users
- the majority of the material and its assessment is at master's level and at the **----- of developments**
- a major component is a **substantial ----- activity** to demonstrate a range of master's level abilities and achievements

Credits – Summer School

national guidance identifies a typical minimum of **180 credits** for a master's degree.

...of which at least ___ will be at master's level.

Discussion

Summer School – could be a level 6 intro to programming (Kotlin, C# or JavaScript is recommended)



----- knowledge, understanding and skills

typically characterised by:

- an ability to evaluate the **technical**, **societal** and **management** dimensions of CS
- a knowledge, understanding, and use of **advanced aspects of CS**
- a combination of **theory and theoretical guided** -----
- a strong emphasis on the underlying **discipline and/or applications**
- the mastery of the practical **methodology** in
 - **software development**
 - **specialised applications** relating to the storing, processing and communication of information
- an understanding and attention to **varied aspects of** -----
- an understanding of professional, legal, social, cultural and ethical issues related to computing and an awareness of **societal and environmental impact**.

Subject Specific Skills

should seek to include the development of the following subject-specific skills:

1. an ability to peer review

that involves the critical review of
papers
software and
proposals,

coupled with positive advice for
improvement and innovation



Subject Specific Skills

competences at a systems level appropriate to the learning outcomes of the programme:

the ability to

1. - - - - - **systems** (which may include software, devices, people, and so on),
2. - - - - - the individual components and
3. **understand** their - - - - - ,
4. - - - - - systems,
5. **replace** them and
6. **create** them;

Subject Specific Skills

2. Systems

socio-technical systems such as those relevant to aspects of - - - - - and

computing systems used in specialised applications such as

- - - - - -
- e-science
- virtual environments
- - - - - - services
- transport

3. Ethics & Practice

familiarity with **codes of ethics and codes of practice** specific to the specialism of the degree programme
relevant **industrial standards and principles** underpinning the development of high integrity systems (for safety, security, trust, privacy, and so on),
the benefits of, approaches to and opportunities offered by - - - - -

4. Entrepreneurship

“acquiring resources to ensure the success of some technically sound endeavour”

...may include

1. a company start-up or
2. placing a well-argued resource request before
 - an industrial concern,
 - a research council or
 - some such organisation

5. Communication Skills

translational skills which involve

“the necessary communication between technical and non-technical audiences”.