Appendices Teaching and Examination Regulations Master's Degree Programme 2010-2011

Computing Science

Appendix A Teaching outcomes of the degree programme (art. 1.3)

The Master graduate in Computing Science

- is fully acquainted with the basic terms and techniques used in Computing Science, and is familiar with a number of classical problems and their solutions
- Is experienced in the effective use of the tools available in solving Computing Science problems, such as compilers, theorem proofs, visualisation software, case-tools and domain specific software and hardware
- is familiar with Computing Science applications in several other scientific fields of study
- is capable of clear communication (both oral and in writing) on the subject of Computing Science and its applications
- is capable of working in a team and in various projects
- is sensitive to the social aspects of Computing Science applications and his/her own responsibilities therein
- has specialized knowledge of theories, methods and techniques in one of the following subfields of Computing Science:
  - Intelligent Systems
  - Software Engineering and Distributed Systems
  - Computational Science and Visualisation
- is able, by using scientific data and assessments, to analyse problems in Computing Science or a related scientific field of study, to provide specified solutions to the problem, and – if possible – to materialise these solutions (in the shape of an algorithm or program or an implementation in software or hardware)
- is able to critically read professional literature and to assess its correctness, usability and relevance
- has a proper understanding of the scientific relevance of problem definitions and results, and of the validity of the scientific method used.

The first six learning outcomes are similar to those of the Bachelor programme in Computing Science. Some subfields in the Computing Science master degree have the following additional learning outcomes:

The Master graduate in Computing Science graduated in the subfield of Intelligent Systems or Computational Science and Visualisation

- is able to contribute to the enhancement of scientific understanding in a subfield of Computing Science.

The Master graduate in Computing Science graduated in the subfield of Software Engineering and Distributed Systems

- is capable of systematically designing and implementing software systems in cooperation with interested parties
- is capable of integrating existing and new software components into a system that meets the quality criteria that were agreed upon.

The Master graduate in Computing Science graduated in the subfield of Management and Industry (BBI)

- has a full understanding of the way in which businesses and policy organisations are functioning (governments and nongovernmental organisations, NGO's)
- understands the connections between natural science research, trade and industry and governmental policies

- is able to integrate aspects of natural science, business and management:
    - being able to translate a concrete problem definition in business or management into a natural science problem definition
    - being able to connect problem aspects of natural sciences to other relevant subject fields
    - being able to put research data and conclusions into a business or policy context
    - has developed his/her social and communicative skills**:**
    - being able to write texts that are effective and to the point
    - being able to draw up an innovation plan or management plan for either a business or a government organisation
    - being able to give convincing oral presentation
    - being able to deliver an active contribution to plenary discussions
    - being familiar with techniques used in business meetings and being capable of chairing a meeting
    - being able to work on a project as part of a team
    - being able to give and receive feedback concerning his/her way of functioning in a team.
- can work in a project:
    - being able to fully consider the interests or objectives of the ordering customer
    - being able to plan a project independently
    - being able to cooperate with the relevant parties involved in the project
    - being able to adequately deal with limitations in time, information and means
    - being able to prepare the implementation of a project result.
- is capable of taking professional responsibility:
    - being able to take responsibility on behalf of the organisation
    - being able to recognize the strategic aspects of his/her own project
    - being able to provide practical solutions in matters concerning the ethical and professional codes of his/her own field of expertise and of the professional organisation.

Appendix B Specializations of the degree programme (art. 2.2)

The Master Computing Science has four specialisations:
· Intelligent Systems (IS)
· Computational Science and Visualisation (CSV)
· Software Engineering and Distributed Systems (SEDS)
· Science in Business & Public Policy (partly in dutch only).

Appendix C Content of the degree programme (art. 2.3)

Below, the module title is followed by the load of study and the form of examination (p=practical, t=written exam).

The compulsory programme for **Intelligent Systems** is:
- Automated Reasoning (5 EC, pt);
- Advanced Web Technology (5 EC, pt);
- Machine Learning (5 EC, pt);
- Student Colloquium (5 EC, p);
- Neural Networks (5 EC, pt);
- Pattern Recognition (5 EC, pt);
- Image Processing (5 EC, pt);
- Multi-Agent Systems (5 EC, t);
- Internship (15 EC, p);
- Computer Vision (5 EC, pt);
- Final project (30 EC, p).

The compulsory programme for **Computational Science and Visualisation** is:
- Advanced Web Technology (5 EC, pt);
- Scientific Visualisation (5 EC, p);
- Introduction Computational Science (5 EC, p);
- Student Colloquium (5 EC, p);
- Advanced Computer Graphics (5 EC, p);
- Numerical Mathematics I (5 EC, pt);
- Image Processing (5 EC, pt);
- Geometric Algorithms (5 EC, p);
- Internship (15 EC, p);
- Modeling and Simulation (5 EC, pt);
- Final Project (30 EC, p).

The compulsory programme for **Software Engineering and Distributed Systems** is:
- Advanced Web Technology (5 EC, pt);
- Software Architecture (5 EC, p);
- Student Colloquium (5 EC, p);
- Software Patterns (5 EC, pt);
- Ubiquitous Computing (5 EC, p);
- Image Processing (5 EC, pt);
- Software Maintenance and Evolution (5 EC, p);
- Internship (15 EC, p);
- Mobile Software (5 EC, p);
- Distributed Systems (5 EC, p);
- Final project (30 EC, p).

The compulsory programme for **Science in Business & Public Policy** is:
- Advanced Web Technology (5 EC, pt);
- Student Colloquium (5 EC, p);
- Image Processing (5 EC, pt);
- Internship (15 EC, p);
- Science in Business & Public Policy (20 EC, p) (in dutch only);
- Final project (40 EC, p).

Appendix D Optional modules (art. 2.4)

Below, the module title is followed by the load of study and the form of examination (p=practical, t=written exam).

Optional modules in the programme for **Intelligent Systems** are:
15 EC are free of choice
15 EC are chosen from:
Dynamic Logic (5 EC, p);
Natural Language Processing (10 EC, p);
Scientific Visualisation (5 EC, pt);
Handwriting Recognition (5 EC, p);
Robotica (5 EC, p);
Business Intelligence (5 EC,p);
Cognitive Robotics (5 EC,pt);
Applied Signal Processing (5 EC, pt).

Optional modules in the programme **Computational Science and Visualisation** are:
15 EC are free of choice
15 EC are chosen from:
Numerical Mathematics II (5 EC, pt);
Probleemoplossen met Mathematica (5 EC, pt);
Pattern Recognition (5 EC, pt);
Machine Learning (5 EC, p);
Computer Vision (5 EC, pt);
Neural Networks (5 EC, pt);
Signal Analysis (6 EC, pt);
Computational Physics (6 EC, pt);
Computational Cognitive Modeling (5 EC, pt).

Optional modules in the programme **Software Engineering and Distributed Systems** are:
15 EC are free of choice;
15 EC are chosen from Master modules in Computing Science, Artificial Intelligence and Industrial Engineering and Management.

Optional modules in the programme **Science in Business & Public Policy** are:
Modules are chosen from the three specializations above.

Appendix E Entry requirements and compulsory order of examinations (art. 3.2)

None

Appendix F Admission to the degree programme and different specializations (art. 4.1.1 + art. 4.2)

The candidate is admitted to the programme in a specific specialisation after completing a matching bridging programme.

Appendix G

Application deadlines for admission (art. 4.5.1)

Deadline of Application	Non-EU students	EU students
Nanoscience	February 1st 2010	February 1st 2010
Behavioural and Cognitive Neurosciences	February 1st 2010	June 1st 2010
Biomolecular Sciences (topprogramme)	February 1st 2010	April 15th 2010
Evolutionary Biology (topprogramme/EM)	February 1st 2010	February 1st 2010
Remaining FMNS Masters	April 15th 2010	June 1st 2010

Decision deadlines (art. 4.5.3)

Deadline of Decision	Non-EU students	EU students
Nanoscience	June 1st 2010	July 1st 2010
Behavioural and Cognitive Neurosciences	June 1st 2010	July 1st 2010
Biomolecular Sciences (topprogramme)	June 1st 2010	July 15th 2010
Evolutionary Biology (topprogramme/EM)	June 1st 2010	June 1st 2010
Remaining FMNS Masters	June 15th 2010	July 1st 2010