Curriculum for the Master of Science Programme in Information Technology at the IT University of Copenhagen, Software Development

Curriculum of 1 August 2018

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Background

This curriculum for the Master of Science Programme in Information Technology, Software Development, has been drawn up by the Board of Studies ITU at the IT University of Copenhagen (henceforth referred to as the IT University). The curriculum has been drawn up in compliance with the current legislation governing bachelor's and master's (Candidatus) programmes at the universities.

Students enrolled in the above MSc study programmes with study start from autumn of 2018 study according to this curriculum.

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Chapter 1

Programme Title and Objectives

Programme Title

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Section 1. A student, who has completed the programme, has the right to use the title candidatus/candidata informationis technologiae (cand.it.) i softwareudvikling.

Subsection 2. The title in English is Master of Science (MSc) in Information Technology, Software Development.

Programme Objectives

Section 2. The purpose of the Master of Science Programme in Information Technology is to provide students with the scientific qualifications to identify, formulate, solve and reflect on complex problems relating to information technology.

Subsection 2. The programme prioritises the student's ability to assess, apply and develop the underlying technology as well as the scientific theories, methods and tools upon which it is based.

Subsection 3. The student must have the ability to independently initiate and carry out collaborative work in professional and multidisciplinary settings. Furthermore, the student must have the ability to engage in global and distributed interaction, drawing on research-based perspectives.

Subsection 4. On the background of the student's preceding bachelor's programme, the programme provides the student with the qualifications to define his or her own academic profile within the field of information technology and to take independent responsibility for his or her own professional development and specialisation.

Subsection 5. Within the framework of the programme, the student can acquire the requisite individual qualifications for specialised posts in business and industry as well as for research training programmes (PhD programme) in information technology.

Objectives for Learning Output

Section 3 The graduate will develop research based *knowledge and understanding of, and will be able to reflect on*:

- general concepts of programming languages
- analysis of software performance in theory and practice
- principles of software design, modelling and software architecture

Each graduate obtains specialised knowledge and understanding at international research level in the selected specialisation area.

Subsection 2. The graduate will develop the following research based *skills*:

- The graduate can master a modern programming platform to implement software.
- The graduate can use, assess and develop fundamental processes and practices of software development, such as requirements analysis, architecting, implementing, tuning, validating and documenting software.
- The graduate is able to communicate and discuss the acquired knowledge with both academic peers and non-specialists.

Each graduate obtains specialised skills at international research level in the selected specialisation area.

Subsection 3. The graduate will develop the following research based *competences*:

- The graduate can independently initiate and implement collaboration with others in complex, inter-disciplinary and changing contexts, for example, in international and industrial projects.
- The graduate can independently take responsibility for own professional development and specialisation.
- The graduate can exploit his or her non-software domain knowledge (obtained in the undergraduate studies) with newly obtained software development expertise to design domain-specific application software.
- The graduate can work with customers, end-users and other business stakeholders on designing and developing software solutions meeting the business requirements.

Each graduate obtains specialised competences at international research level in the selected specialisation area.

Chapter 2

Programme Structure, Content and Programme Language

Programme Structure

Section 4. The Master of Science programme requires passes in study activities corresponding to 120 ECTS points comprising a mandatory backbone, specialisation modules, optional modules, and a master's thesis.

Subsection 2. The study activities of the programme are composed of modules corresponding to 90 ECTS points and a concluding master's thesis corresponding to 30 ECTS points.

Subsection 3. A visualisation of the programme structure is available at the IT University's online Study Guide.

Programme Content

Section 5. The mandatory backbone of the MSc study programme in Software Development comprises four modules corresponding to 52.5 ECTS points within the first three terms as follows.

1. Programming (22.5 ECTS)
The module focuses on introductory programming concepts and practical experience, including imperative object-oriented programming and/or functional programming, and introductory database design.

2. Foundations (15 ECTS)
The module focuses on the foundations of software development, such as algorithms, data structures and discrete mathematics.

3. Software Engineering (7.5 ECTS)
The module focuses on software development methods for assuring quality.

4. Research Module (7.5 ECTS)
The module focuses on establishing research background and methodology in preparation for the subsequent thesis module.

Subsection 2. The choice of a specialisation is mandatory. A specialisation comprises modules corresponding to 22.5 ECTS points within the second and the third term.

Subsection 3. The optional modules comprises 15 ECTS points within the second and the third term.

Programme Language

Section 7. The MSc in Software Development study programme is conducted in English.

Chapter 3

General Rules and Miscellaneous Regulation

Section 8. Furthermore, please refer to the IT University's rules and regulation, appendix to this curriculum.

Chapter 4

Date of Commencement and Transitional Regulations

Section 9. This curriculum comes into force 1 September 2018 and applies to all students admitted to the programme from autumn 2018.

Subsection 2. Students, who are enrolled under previous curriculums, may apply to the Board of Studies ITU to complete the programme under the present curriculum if this can be done within a maximum of 120 ECTS point.

Subsection 3. When a new curriculum is published, or in the event of significant changes to this curriculum, transitional regulations will be set out in the curriculum as appendix.

Approved by the Board of Studies ITU 24 August 2017

Approved by Vice Chancellor Mads Tofte 2 January 2018