



AALBORG UNIVERSITET

STUDIEORDNING FOR CIVILINGENIØR, CAND.POLYT. I SUNDHEDSTEKNOLOGI 2011

MASTER OF SCIENCE (MSC) IN ENGINEERING
AALBORG

[Link til denne studieordning](#)

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§ 1: PREFACE

Pursuant to Act 985 of October 21, 2009 on Universities (the University Act) with subsequent changes, the following curriculum for the Master's program in Biomedical Engineering and Informatics is stipulated. The program also follows the Framework Provisions and the Examination Policies and Procedures for the Faculty of Engineering and Science and The Faculty of Medicine.

§ 2: BASIS IN MINISTERIAL ORDERS

The Master's programme is organised in accordance with the Ministry of Higher Education and Science's Order no. 1328 of November 15, 2016 on Bachelor's and Master's Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 1062 of June 30, 2016 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 111 of January 30, 2017 (the Admission Order) and Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order) with subsequent changes.

§ 3: CAMPUS

The programme is offered in Aalborg.

§ 4: FACULTY AFFILIATION

The Master's programme falls under The Faculty of Medicine, Aalborg University.

§ 5: STUDY BOARD AFFILIATION

The Master's programme falls under Study Board of Health, Science and Sports

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme is associated with the external examiners corps on Nationwide engineering examiners/Electronics, IT and Energy (Electromagnetic direction)

§ 7: ADMISSION REQUIREMENTS

Applicants with a legal right of admission (retskrav)

- Bachelor of Science (BSc) in Engineering (Biomedical Engineering and Informatics)

Applicants without legal right of admission

- Admission to the Master's program in Biomedical Engineering requires a Bachelor's degree in Biomedical Engineering or the like. Students with another Bachelor's degree, upon application to the Board of Studies, may be admitted after a specific academic assessment if the applicant is deemed to have comparable educational prerequisites. The University can stipulate requirements concerning conducting additional exams prior to the start of study.

§ 8: THE PROGRAMME TITLE IN DANISH AND ENGLISH

The Master's programme entitles the graduate to the Danish designation Civilingeniør, cand.polyt. i sundhedsteknologi. The English designation is: Master of Science (MSc) in Engineering (Biomedical Engineering and Informatics).

§ 9: PROGRAMME SPECIFICATIONS IN ECTS CREDITS

The Master's programme is a 2-year, research-based, full-time study programme. The programme is set to 120 ECTS credits.

§ 10: RULES CONCERNING CREDIT TRANSFER (MERIT), INCLUDING THE POSSIBILITY FOR CHOICE OF MODULES THAT ARE PART OF ANOTHER PROGRAMME AT A UNIVERSITY IN DENMARK OR ABROAD

The Study Board can approve successfully completed (passed) programme elements from other Master's programmes in lieu of programme elements in this programme (credit transfer). The Study Board can also approve successfully completed (passed) programme elements from another Danish programme or a programme outside of Denmark at the

same level in lieu of programme elements within this curriculum. Decisions on credit transfer are made by the Study Board based on an academic assessment. See the Joint Programme Regulations for the rules on credit transfer.

§ 11: EXEMPTIONS

In exceptional circumstances, the Study Board study can grant exemption from those parts of the curriculum that are not stipulated by law or ministerial order. Exemption regarding an examination applies to the immediate examination.

§ 12: RULES FOR EXAMINATIONS

The rules for examinations are stated in the Examination Policies and Procedures published by the faculty on their website.

§ 13: RULES CONCERNING WRITTEN WORK, INCLUDING THE MASTER'S THESIS

In the assessment of all written work, regardless of the language it is written in, weight is also given to the student's formulation and spelling ability, in addition to the academic content. Orthographic and grammatical correctness as well as stylistic proficiency are taken as a basis for the evaluation of language performance. Language performance must always be included as an independent dimension of the total evaluation. However, no examination can be assessed as 'Pass' on the basis of good language performance alone; similarly, an examination normally cannot be assessed as 'Fail' on the basis of poor language performance alone.

The Study Board can grant exemption from this in special cases (e.g., dyslexia or a native language other than Danish).

The Master's Thesis must include an English summary (or another foreign language: French, Spanish or German upon approval by the Study Board). If the project is written in English, the summary must be in Danish (The Study Board can grant exemption from this). The summary must be at least 1 page and not more than 2 pages (this is not included in any fixed minimum and maximum number of pages per student). The summary is included in the evaluation of the project as a whole.

§ 14: REQUIREMENTS REGARDING THE READING OF TEXTS IN A FOREIGN LANGUAGE

§ 15: COMPETENCE PROFILE ON THE DIPLOMA

The following competence profile will appear on the diploma:

A Candidatus graduate has the following competency profile:

A Candidatus graduate has competencies that have been acquired via a course of study that has taken place in a research environment.

A Candidatus graduate is qualified for employment on the labour market based on his or her academic discipline as well as for further research (PhD programmes). A Candidatus graduate has, compared to a Bachelor, developed his or her academic knowledge and independence so as to be able to apply scientific theory and method on an independent basis within both an academic and a professional context.

§ 16: COMPETENCE PROFILE OF THE PROGRAMME

The graduate of the Master's programme

Knowledge and comprehension

- has knowledge of scientific communication and statistical methods (including experimental design and clinical studies) and of at least two of the following key areas within Biomedical Engineering and Informatics (BMEI), based on the highest international level of research within the areas,
 - Signal processing and image analysis,
 - Pattern recognition and decision support,
 - Clinical information systems,
 - Sensory-motor control and rehabilitation technology,
 - Physiologic modeling,
- understands knowledge within the selected key areas of BMEI and is able to reflect on a scientific basis on this knowledge, and is able to identify scientific problems, either related to clinical research or basic research, within the area;

Skills

- masters the BMEI's scientific methods and tools, and masters general skills related to jobs within BMEI, either within the health care environment or in industry,
- is able to judge and to choose from the discipline's scientific theories, methods, tools and general skills, and is able, on a scientific basis, to propose new models for analysis and problem solving within BMEI,
- is able to communicate research based knowledge and is able to discuss professional and scientific problems with fellow biomedical engineers, with health care personnel, including medical specialists, as well as with non-specialists;

Competences

- is able to control situations that are complex, unpredictable and which require new solutions,
- is able to independently initiate and to perform collaboration within the discipline and interdisciplinary as well, and to take professional responsibility,
- is able to independently take responsibility for his or her own professional development and specialization.

The following competence profile will appear on the diploma:

A graduate of the Master's program has Competences acquired through an educational program that has taken place in a research environment.

The graduate of the Master's program can perform highly qualified functions on the labor market on the basis of the educational program. Moreover, the graduate has prerequisites for research (a Ph.D. program). Compared to the Bachelor's degree, the graduate of the Master's program has developed her/his academic knowledge and independence, so that the graduate can independently apply scientific theory and method in both an academic and occupational/professional context.

§ 17: STRUCTURE AND CONTENTS OF THE PROGRAMME

The program is structured in modules and organized as a problem-based study. A module is a program element or a group of program elements, which aims to give students a set of professional skills within a fixed time frame specified in ECTS credits, and concluding with one or more examinations within specific exam periods. Examinations are defined in the curriculum.

The program is based on a combination of academic, problem-oriented and interdisciplinary approaches and organized based on the following work and evaluation methods that combine skills and reflection:

- project work
- lectures
- workshops
- exercises (individually and in groups)
- feedback (from teachers and fellow students)
- academic reflection

§ 18: OVERVIEW OF THE PROGRAMME

Offered as: 1-professional					
Module name	Course type	ECTS	Applied grading scale	Evaluation method	Assessment method
1 SEMESTER					
Biomedical signals and information	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
Scientific methods and communication	Course	5	Passed/Not Passed	Internal examination	Active participation/continuous evaluation

Elective courses 1 semester choose 2 = 10 ECTS					
2 SEMESTER					
Biomedical (information) systems	Project	15	7-point grading scale	External examination	Oral exam based on a project
Elective courses 2 semester Choose 3 = 15 ECTS					
3 SEMESTER					
Applied biomedical engineering and informatics	Project	30	7-point grading scale	Internal examination	Oral exam based on a project
3-4 SEMESTER					
Master's thesis (2 semesters - 60 ECTS)	Project	60	7-point grading scale	External examination	Oral exam based on a project
4 SEMESTER					
Master's thesis	Project	30	7-point grading scale	External examination	Oral exam based on a project

Elective courses 1 semester choose 2 = 10 ECTS					
Module name	Course type	ECT S	Applied grading scale	Evaluation Method	Assessment method
Stochastic signals and processes (elective 1.a)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Pattern recognition and decision support (elective 1.b.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
The semantics of clinical information systems (elective 1.c.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Sensory systems and sensory-motor control (elective 1.d.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam

Elective courses 2 semester Choose 3 = 15 ECTS					
Module name	Course type	ECT S	Applied grading scale	Evaluation Method	Assessment method
Advanced signal processing (elective 2.a.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Image analysis and computer vision (elective 2.b.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Methods and models in clinical information systems (elective 2.c.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Rehabilitation and Assistive Technology (elective 2.d.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Physiologic modeling (elective 2.e.)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam

§ 19: ADDITIONAL INFORMATION

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the Dean of the Faculty of Medicine and enters into force as of September 2011.

Students who wish to complete their studies under a previous curriculum must conclude their education by the summer examination period 2012 at the latest, since examinations under the previous curriculum are not offered after this time. In accordance with the Framework Provisions and the Handbook on Quality Management for the Faculty of Engineering and Science and The Faculty of Medicine at Aalborg University, the curriculum must be revised no later than 5 years after its entry into force.

§ 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS

Minor editorial changes have been made in connection with the digitisation of the study curriculum.