



AALBORG UNIVERSITET

MASTER OF SCIENCE IN ENGINEERING (NANOBIOTECHNOLOGY), 2017

MASTER OF SCIENCE (MSC) IN ENGINEERING
AALBORG

[Link til denne studieordning](#)

INDHOLDSFORTEGNELSE

| | |
|---|---|
| § 1: Preface | 3 |
| § 2: Basis in ministerial orders | 3 |
| § 3: Campus | 3 |
| § 4: Faculty affiliation | 3 |
| § 5: Study board affiliation | 3 |
| § 6: Affiliation to corps of external examiners | 3 |
| § 7: Admission requirements | 3 |
| § 8: The programme title in Danish and English | 3 |
| § 9: Programme specifications in ECTS credits | 3 |
| § 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 | 3 |
| § 11: Exemptions | 4 |
| § 12: Rules for examinations | 4 |
| § 13: Rules concerning written work, including the Master's Thesis | 4 |
| § 14: Requirements regarding the reading of texts in a foreign language | 4 |
| § 15: Competence profile on the diploma | 4 |
| § 16: Competence profile of the programme | 4 |
| § 17: Structure and Contents of the programme | 5 |
| § 18: Overview of the programme | 5 |
| § 19: Additional information | 7 |
| § 20: Commencement and transitional rules | 7 |
| § 21: Amendments to the curriculum and regulations | 7 |

§ 1: PREFACE

Pursuant to Act 261 of March 18, 2015 on Universities (the University Act) with subsequent changes, the following curriculum is established. The programme also follows the Joint Programme Regulations and the Examination Policies and Procedures for The Faculty.

§ 2: BASIS IN MINISTERIAL ORDERS

The Master's programme is organised in accordance with the Ministry of Higher Education and Science's Ministerial 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) with subsequent changes. Further reference is made to Ministerial Order no. 258 of March 18, 2015 (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 Faculty of Engineering and Science, Aalborg University.

§ 5: STUDY BOARD AFFILIATION

The Master's programme falls under Study Board of Materials and Production

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme is associated with the external examiners corps on Nationwide engineering examiners/Mathematics, Physics and Social Studies (Basic Courses).

(Ingeniørernes landsdækkende censorkorps mat,fys,samf).

§ 7: ADMISSION REQUIREMENTS

Applicants with a legal right of admission (retskrav)

- Bachelor of Science (BSc) in Engineering (Nanotechnology with specialisation in Biotechnology), Aalborg University

Applicants without legal right of admission

- Bachelor of Engineering in Nanotechnology, Aalborg University

§ 8: THE PROGRAMME TITLE IN DANISH AND ENGLISH

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

§ 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 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

At programmes that are taught in Danish, it is assumed that the student can read academic texts in modern Danish, Norwegian, Swedish, and English and use reference works, etc., in other European languages. At programmes taught in English, it is assumed that the student can read academic texts and use reference works, etc., in English.

§ 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

Students graduating with a degree in Nanobiotechnology have acquired the following knowledge, skills and competencies:

Knowledge

- has knowledge in the major areas within nanobiotechnology that covers advanced gene technology, reaction engineering, high throughput systems, molecular electronics, molecular simulations, self-assembling systems, reaction at interfaces, and spectroscopic methods such as MS and NMR
- can understand and reflect over theory, methods and experiments within the mentioned areas

Skills

- should be able to apply up-to-date methods to describe and solve problems on a scientific level within nanobiotechnology
- can evaluate problems and select among the scientific theories, methods, tools and general skills within the mentioned areas in order to find a solution based on a scientific analyses

- can communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists

Competencies

- can manage work and development situations that are complex, unpredictable and require new solutions
- can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- can independently take responsibility for own professional development and specialization

§ 17: STRUCTURE AND CONTENTS OF THE PROGRAMME

The program is structured in modules and organised 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 that are defined in the curriculum.

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

- lectures
- classroom instruction
- project work
- workshops
- exercises (individually and in groups)
- teacher feedback
- reflection
- portfolio work

All modules are assessed through individual grading according to the 7-point scale or Pass/Fail. All modules are assessed by external examination (external grading) or internal examination (internal grading or by assessment by the supervisor only).

§ 18: OVERVIEW OF THE PROGRAMME

| Offered as: 1-professional | | | | | |
|--|-------------|------|-----------------------|----------------------|--|
| Study programme: Nanobiotechnology | | | | | |
| Module name | Course type | ECTS | Applied grading scale | Evaluation method | Assessment method |
| 1 SEMESTER | | | | | |
| Nanobioengineering | Project | 15 | 7-point grading scale | Internal examination | Oral exam based on a project |
| Advanced Gene Technology | Course | 5 | 7-point grading scale | Internal examination | Written or oral exam |
| Reaction Engineering and Molecular Electronics | Course | 5 | 7-point grading scale | Internal examination | Oral exam |
| Molecular Simulations | Course | 5 | Passed/Not Passed | Internal examination | Active participation/continuous evaluation |
| 2 SEMESTER | | | | | |

| | | | | | |
|--|---------|-------------|-----------------------|----------------------|------------------------------|
| Characterisation of Nanostructures | Project | 15 | 7-point grading scale | External examination | Oral exam based on a project |
| Self-Assembling Systems | Course | 5 | Passed/Not Passed | Internal examination | Written or oral exam |
| Physics and Chemistry of Surfaces | Course | 5 | 7-point grading scale | Internal examination | Oral exam |
| NMR and MS | Course | 5 | 7-point grading scale | Internal examination | Written or oral exam |
| 3 SEMESTER | | | | | |
| Projects on 3'rd semester | Project | 15/20/25/30 | | | |
| Elective courses on 3'rd semester | Course | 0/5/10/15 | | | |
| 3-4 SEMESTER | | | | | |
| Master's Thesis | Project | 45/50/60 | | | |
| Elective courses on 3'rd semester | Course | 0/10/15 | | | |
| 4 SEMESTER | | | | | |
| Master's Thesis (30 ECTS) | Project | 30 | 7-point grading scale | External examination | Oral exam based on a project |

The project on the 3'rd semester can either be a normal semester project of up to 30 ECTS or can be combined with the Master's Thesis to a Long Master's Thesis. In case of a separate project, the scope of the project can vary between 15, 20, 25, and 30 ECTS dependent on how many elective courses are chosen by the student. A Long Master's Thesis can vary between 45, 50, and 60 ECTS dependent on how many elective courses are taken by the student.

Students on the 3'rd semester have also the possibility to study at another Danish or international university (go abroad), as well as they can spend the semester at a company performing an academic internship. Studying at another university (including universities abroad), an academic internship at a company, and a Long Master's Thesis need to be approved by the board of studies.

| Projects on 3'rd semester | | | | | |
|--|-------------|------|-----------------------|----------------------|------------------------------|
| Module name | Course type | ECTS | Applied grading scale | Evaluation Method | Assessment method |
| Advanced Nanobiotechnology (15 ECTS) | Project | 15 | Passed/Not Passed | Internal examination | Oral exam based on a project |
| Advanced Nanobiotechnology (20 ECTS) | Project | 20 | Passed/Not Passed | Internal examination | Oral exam based on a project |
| Advanced Nanobiotechnology (25 ECTS) | Project | 25 | Passed/Not Passed | Internal examination | Oral exam based on a project |
| Advanced Nanobiotechnology (30 ECTS) | Project | 30 | Passed/Not Passed | Internal examination | Oral exam based on a project |
| Academic Internship (30 ECTS) | Project | 30 | 7-point grading scale | Internal examination | Oral exam based on a project |

| Elective courses on 3'rd semester | | | | | |
|-----------------------------------|-------------|------|-----------------------|-------------------|-------------------|
| Module name | Course type | ECTS | Applied grading scale | Evaluation Method | Assessment method |
| | | | | | |

| | | | | | |
|--|--------|---|-----------------------|----------------------|--|
| Synthesis and Characterisation (course module) | Course | 5 | Passed/Not Passed | Internal examination | Active participation and/or written assignment |
| Test and Validation | Course | 5 | Passed/Not Passed | Internal examination | Written and oral exam |
| Materials Chemistry | Course | 5 | 7-point grading scale | Internal examination | Written or oral exam |

| Master's Thesis | | | | | |
|---|-------------|------|-----------------------|----------------------|------------------------------|
| Module name | Course type | ECTS | Applied grading scale | Evaluation Method | Assessment method |
| Master's Thesis (45 ECTS) | Project | 45 | 7-point grading scale | External examination | Oral exam based on a project |
| Master's Thesis (50 ECTS) | Project | 50 | 7-point grading scale | External examination | Oral exam based on a project |
| Master's Thesis (60 ECTS) | Project | 60 | 7-point grading scale | External examination | Oral exam based on a project |

§ 19: ADDITIONAL INFORMATION

All students who have not participated in Aalborg University's PBL introductory course during their Bachelor's degree must attend the introductory course "Problem-based Learning and Project Management". The introductory course must be approved before the student can participate in the project exam. For further information, please see the School of Engineering and Science' website.

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the dean and enters into force as of 1st September 2017.

Students who wish to complete their studies under the previous curriculum from 2016 must conclude their education by the summer examination period 2018 at the latest, since examinations under the previous curriculum are not offered after this time.

§ 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS