



AALBORG UNIVERSITET

# **MASTER OF SCIENCE (MSC) IN ENGINEERING (BIOTECHNOLOGY)**

MASTER OF SCIENCE (MSC) IN ENGINEERING  
AALBORG

[Link til denne studieordning](#)

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## § 1: PREFACE

Pursuant to Act 261 of March 18, 2015 on Universities (the University Act) with subsequent changes, the following curriculum for the Master's program in Biotechnology is stipulated. The program also follows the Joint Programme Regulations and the Examination Policies and Procedures for The Technical Faculty of IT and Design, 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. 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 Biotechnology, Chemistry and Environmental Engineering

## § 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The programme falls under the external evaluator corps: Ingeniøruddannelsernes landsdækkende censorkorps – kemi.

## § 7: ADMISSION REQUIREMENTS

### Applicants with a legal right of admission (retskrav)

Applicants with one of the following degrees are entitled to admission:

- Bachelor i Bioteknologi, Aalborg University

### Applicants without legal right of admission

- Bachelor in Sustainable biotechnology, Aalborg University

Students with another Bachelor's degree, upon application to the Board of Studies, will 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 program entitles the graduate to the designation *civilingeniør, cand.polyt. (candidatus/candidata polytechnices) i bioteknologi*. The English designation is: Master of Science (MSc) in Engineering (Biotechnology).

The Master's program with specialisation in Medical Biotechnology entitles the graduate to the designation *civilingeniør, cand.polyt. (candidatus/candidata polytechnices) i bioteknologi med specialisering i medicinsk bioteknologi*. The English designation is: Master of Science (MSc) in Engineering (Biotechnology with specialisation in Medical Biotechnology).

## § 9: PROGRAMME SPECIFICATIONS IN ECTS CREDITS

The Master's program is a 2-year, research-based, full-time study program. The program 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**

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.

## **§ 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**

- Has in-depth knowledge of biotechnology. In selected areas, such as cellular and molecular biology, protein biotechnology, bioinformatics and genetic engineering, knowledge is based on the latest international research.

## Master of Science (MSc) in Engineering (Biotechnology)

- Is able, on a scientific basis, to understand and contemplate the knowledge in the above-mentioned areas and be able to identify scientific problems.

### Skills

- Master the scientific methods and tools of the above-mentioned areas and master the general skills that are central to work within biotechnology.
- Is able to evaluate and select among the scientific theories, methods, tools and general skills of biotechnology, and establish new analysis and solution models on a scientific basis.
- Is able to communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists.

### Competencies

- Is able to carry out research and development in the area of microbiology and microbial products and processes, development and quality analyses of recombinant products, modified proteins and pharmaceutical products, following GLP and GMP principles and proper safety regulations.
- Is able to independently initiate and carry out discipline-specific and cross-disciplinary cooperation and to assume professional responsibility within the area of biotechnology.
- Is able to independently take responsibility for own professional development and specialization.

### The graduate of the Master's program with specialization in medical biotechnology:

#### Knowledge

- Has in-depth knowledge of biotechnology and medical biotechnology. In selected areas, such as cellular and molecular biology, protein biotechnology, bioinformatics and genetic engineering, knowledge is based on the latest international research.
- Is able, on a scientific basis, to understand and contemplate the knowledge in the above-mentioned areas and be able to identify scientific problems.

#### Skills

- Master the scientific methods and tools of the above-mentioned areas and master the general skills that are central to work within medical biotechnology
- Is able to evaluate and select among the scientific theories, methods, tools and general skills of biotechnology, and establish new analysis and solution models on a scientific basis.
- Is able to communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists.

#### Competencies

- Is able to carry out research and development in the area of microbiology and microbial products and processes, development and quality analyses of recombinant products, modified proteins and pharmaceutical products, following GLP and GMP principles and proper safety regulations.
- Is able to independently initiate and carry out discipline-specific and cross-disciplinary cooperation and to assume professional responsibility within the area of medical biotechnology.
- Is able to independently take responsibility for own professional development and specialization.

## § 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:

- Lectures
- Classroom instruction

- Project work
- Workshops
- Exercises (individually and in groups)
- Teacher feedback

## § 18: OVERVIEW OF THE PROGRAMME

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).

Offered as: 1-professional					
Module name	Course type	ECT S	Applied grading scale	Evaluation method	Assessment method
<b>1 SEMESTER</b>					
<a href="#">Experimental Molecular Biology</a>	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
<a href="#">Molecular Biology and Bioinformatics</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Cell Biology, Immunology and Genetics</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Microbial Diversity and Activity</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<b>2 SEMESTER</b>					
<a href="#">Protein Science</a>	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
<a href="#">Protein Chemistry</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Protein Structure</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Carbohydrate Chemistry</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<b>3 SEMESTER</b>					
<a href="#">Project Work in an External Organisation</a>	Project	30	Passed/Not Passed	External examination	Oral exam based on a project
<b>4 SEMESTER</b>					
<a href="#">Master's Thesis in Biotechnology</a>	Project	30	7-point grading scale	External examination	Master's thesis/final project
<b>3-4 SEMESTER</b>					
<a href="#">Master's Thesis in Biotechnology</a>	Project	60	7-point grading scale	External examination	Master's thesis/final project

Offered as: 1-professional					
Specialisation: Medical Biotechnology					
Module name	Course type	ECT S	Applied grading scale	Evaluation method	Assessment method

1 SEMESTER					
<a href="#">Experimental Molecular Biology</a>	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
<a href="#">Molecular Biology and Bioinformatics</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Cell Biology, Immunology and Genetics</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Microbial Diversity and Activity</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
2 SEMESTER					
<a href="#">Medical Protein Science</a>	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
<a href="#">Protein Chemistry</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Protein Structure</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
<a href="#">Carbohydrate Chemistry</a>	Course	5	7-point grading scale	Internal examination	Written or oral exam
3 SEMESTER					
<a href="#">Project Work in an External Organisation</a>	Project	30	Passed/Not Passed	External examination	Oral exam based on a project
4 SEMESTER					
<a href="#">Master's Thesis in Medical Biotechnology</a>	Project	30	7-point grading scale	External examination	Master's thesis/final project
3-4 SEMESTER					
<a href="#">Master's Thesis in Medical Biotechnology</a>	Project	60	7-point grading scale	External examination	Master's thesis/final project

## § 19: ADDITIONAL INFORMATION

The current version of the curriculum is published on the Board of Studies' website, including more detailed information about the program, including exams.

*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 course description](#)*

## § 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS

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