AALBORG UNIVERSITET

CURRICULUM FOR THE MASTER'S PROGRAMME IN NANOBIOTECHNOLOGY, 2022

MASTER OF SCIENCE (MSC) IN ENGINEERING
AALBORG

Link to this studyline

Link(s) to other versions of the same line:

Master of Science (MSc) in Engineering (Nanobiotechnology) 2020

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§ 1: PREFACE

Pursuant to consolidation Act 778 of August 7, 2019 on Universities (the University Act), the following is established.

The programme also follows the Examination Policies and Procedures incl. the Joint Programme Regulations for Aalborg University.

§ 2: BASIS IN MINISTERIAL ORDERS

The Master's programme is organised in accordance with the Ministry of Higher Education and Science's Order no. 2285 of December 1, 2021 on Full-time University Programmes (the University Programme Order) and Ministerial Order no. 2271 of December 1, 2021 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 104 of January 24, 2021 (the Admission Order) and Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order).

§ 3: CAMPUS

The programme is offered in Aalborg.

§ 4: FACULTY AFFILIATION

The Master's programme falls under The Faculty of Engineering and Science, Aalborg University.

§ 5: STUDY BOARD AFFILIATION

The Master's programme falls under Study Board of Mechanical Engineering and Physics

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme is associated with the external examiners corps on Civil engineering corps of external examiners.

§ 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
- BSc in Engineering (Biotechnology), Aalborg University
- BSc in Engineering (Biotechnology), Aarhus University
- BSc in Engineering (Biotechnology), Technical University of Denmark
- Bachelor of Science (BSc) in Nanoscience, Aarhus University
- Bachelor of Science (BSc) in Nanoscience, University of Copenhagen
- BSc in Engineering (Chemical Engineering and Biotechnology), Aalborg University
- BSc in Engineering (Chemistry and Biotechnology), University of Southern Denmark

All applicants must, as a minimum, document English language qualifications comparable to an "English B level" in the Danish upper secondary school (gymnasium) (cf. the Admission Order).

§ 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 that passed programme elements from other educational programmes at the same level replaces programme elements within this programme (credit transfer).

Furthermore, the Study Board can, upon application, approve that parts of this programme is completed at another university or a further education institution in Denmark or abroad (pre-approval of credit transfer).

The Study Board's decisions regarding credit transfer are based on an academic assessment.

§ 11: EXEMPTIONS

The Study Board's possibilities to grant exemption, including exemption to further examination attempts and special examination conditions, are stated in the Examination Policies and Procedures published at this website: https://www.studieservice.aau.dk/regler-vejledninger

§ 12: RULES FOR EXAMINATIONS

The rules for examinations are stated in the Examination Policies and Procedures published at this website: https://www.studieservice.aau.dk/regler-vejledninger

§ 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. If the project is written in English, the summary can be in Danish. 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 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 reflects over theory, methods and experiments within the mentioned areas
- can demonstrate insight into the implications of research work, including research ethics

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
- are competent to solve new and complicated technical problems by the use of advanced mathematics, scientific and technological knowledge
- can evaluate and select digital tools based on their appropriateness to specific tasks within nanobiotechnology

§ 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

§ 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	ECTS	Applied grading scale	Evaluation method	Assessment method	Language
1 SEMESTER						
Nanobioengineering (M-NB-K1-1)	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Advanced Gene Technology (M-NB-K1-2)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Reaction Engineering and Molecular Electronics (M-NB-K1-3)	Course	5	7-point grading scale	Internal examination	Oral exam	English
Molecular Simulations (M-NB-K1-4)	Course	5	Passed/Not Passed	Internal examination	Active participation/continuous evaluation	English
2 SEMESTER						
Characterisation of Nanobiostructures (M-NB-K2-1A)	Project	15	7-point grading scale	External examination	Oral exam based on a project	English
Self-Assembling Systems (F-NB-K2-2)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Physics and Chemistry of Surfaces (F-FYS-K2-5A)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
NMR and MS (K-BT-B6-14A)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
3 SEMESTER Option A						
Advanced Nanobiotechnology (M-NB-K3-2)	Project	20	Passed/Not Passed	Internal examination	Oral exam based on a project	English
Materials Chemistry (K-KEM-K1-20)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Materials Characterization (M-MN-K1-2A)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
3 SEMESTER Option B						
Advanced Nanobiotechnology (M-NB-K3-3)	Project	25	Passed/Not Passed	Internal examination	Oral exam based on a project	English
Elective courses on 3'rd semester	Course	5				
3 SEMESTER Option C						
Advanced Nanobiotechnology (M-NB-K3-4)	Project	30	Passed/Not Passed	Internal examination	Oral exam based on a project	English
3 SEMESTER Option D						
Project-oriented Study in an External Organisation (M-NB-K3-5)	Project	30	7-point grading scale	Internal examination	Oral exam based on a project	English
3-4 SEMESTER Option E						

Master's Thesis (M-NB-K4-3)	Project	50	7-point grading scale	External examination	Master's thesis/final project	English
Materials Characterization (M-MN-K1-2A)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Materials Chemistry (K-KEM-K1-20)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
3-4 SEMESTER Option F						
Master's Thesis (M-NB-K4-4)	Project	60	7-point grading scale	External examination	Master's thesis/final project	English
4 SEMESTER						
Master's Thesis (M-NB-K4-1)	Project	30	7-point grading scale	External examination	Master's thesis/final project	English

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 20, 25, and 30 ECTS dependent on how many elective courses are chosen by the student. A Long Master's Thesis can vary between 50 and 60 ECTS..

Students on the 3'rd semester also have the possibility to study at another Danish or international university or to do a Project Oriented Study in an External Organisation. Studying at another university (including universities abroad), doing a Project Oriented Study in an External Organisation or writing a Long Master's Thesis must be approved by the board of studies in advance.

Elective courses on 3'rd semester						
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method	Language
Materials Chemistry (K-KEM-K1-20)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Materials Characterization (M-MN-K1-2A)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English

§ 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 website of the Study Board for Mechanics and Physics: https://www.mp.aau.dk/education/study-board/study+board+of+mechanics+and+physics/.

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the dean and enters into force as of 1 September 2022.

The Study Board does not offer teaching after the previous curriculum from 2020 after the summer examination 2023.

The Study Board will offer examinations after the previous curriculum, if there are students who have used examination attempts in a module without passing. The number of examination attempts follows the rules in the Examination Order.

§ 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS