AALBORG UNIVERSITET

CURRICULUM FOR THE MASTER OF SCIENCE IN TECHNOLOGY IN RISK AND SAFETY MANAGEMENT, 2018, VERSION 2

MASTER OF SCIENCE (MSC) IN TECHNOLOGY
ESBJERG

Link to this studyline

Curriculum for The Master of Science in Technology in Risk and Safety Management, 2018, version 2

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

Curriculum for the Master of Science in Technology in Risk and Safety Management, 2020

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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 Risk and Safety Management is stipulated. The program also follows the Joint Programme Regulations and the Examination Policies and Procedures for the Faculty of Engineering and Science.

§ 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).

§ 3: CAMPUS

The Master's programme is offered in Esbjerg.

§ 4: FACULTY AFFILIATION

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

§ 5: STUDY BOARD AFFILIATION

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

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme falls under the external examiners corps on Nationwide engineering examiners/Building.

§ 7: ADMISSION REQUIREMENTS

Applicants with a legal right of admission (retskrav)
Aalborg University offers no bachelor's programmes with a legal right of admission to this Master's program

Applicants without legal right of admission
Bachelor's programmes qualifying students for admission:

- Bachelor of Science in Civil Engineering; Structural and Civil Engineering, Aalborg University
- Bachelor of Science in Engineering (Civil Engineering with specialisation in Structural and Civil Engineering)
- Bachelor of Science in Civil Engineering; Indoor Environmental and Energy Engineering, Aalborg University
- Bachelor of Science in Engineering (Civil Engineering with specialisation in Indoor Environmental Engineering)
- Bachelor of Science in Civil Engineering; Water and Environment, Aalborg University
- Bachelor of Science (BSc) in Engineering (Civil Engineering with specialisation in Water and Environment)
- Bachelor of Science in Civil Engineering; Transportation Engineering, Aalborg University
- Bachelor of Science (BSc) in Engineering (Civil Engineering with specialisation in Traffic and Highway Engineering)
- Bachelor of Science (BSc) in Engineering (Structural and Civil Engineering), Aalborg University, Campus Esbjerg
- Bachelor of Science (BSc) in Engineering (Mechanical Engineering and Manufacturing), Aalborg University, Campus Aalborg
- Bachelor of Science (BSc) in Engineering (Mechanical Design), Aalborg University, Campus Esbjerg
- Bachelor of Engineering in Civil Engineering, Structural and Civil Engineering, Aalborg University
- Bachelor of Engineering in Civil Engineering; Indoor Environmental and Energy Engineering, Aalborg University

- Bachelor of Engineering in Civil Engineering; Water and Environment, Aalborg University
- Bachelor of Engineering in Civil Engineering; Transportation Engineering, Aalborg University
- Bachelor of Engineering in Civil Engineering, Traffic and Highway Engineering, Aalborg University
- Bachelor of Engineering in Civil Engineering, Aalborg University, Campus Esbjerg
- Bachelor of Engineering in Mechanical Engineering, Aalborg University, Campus Aalborg
- Bachelor of Engineering in Mechanical Engineering, Aalborg University, Campus Esbjerg
- Bachelor of Science in Mechanical Engineering, Technical University of Denmark
- Bachelor of Science in Civil Engineering, Technical University of Denmark
- Bachelor of Science in Chemical Engineering, Aarhus University
- Bachelor of Science in Engineering (Chemistry and Technology), Technical University of Denmark
- Bachelor of Science in Engineering (Biotechnology),Technical University of Denmark
- Bachelor of Engineering in Civil and Structural Engineering, Aarhus University
- Bachelor of Engineering in Civil Engineering, Technical University of Denmark
- Bachelor of Engineering in Civil Engineering, University of Southern Denmark
- Bachelor of Engineering in Mechanical Engineering, University of Southern Denmark
- Bachelor of Engineering in Mechanical Engineering, Aarhus University
- Bachelor of Engineering in Mechanical Engineering, Technical University of Denmark
- Bachelor of Engineering in Chemical Engineering, Aarhus University
- Bachelor of Engineering in Chemical and Bio Engineering, Technical University of Denmark
- Bachelor of Science in Public Health, University of Southern Denmark
- Bachelor of Science in Economics and Business Administration, University of Southern Denmark
- Bachelor of Architectural Technology and Construction Management, University College of Northern Denmark
- Bachelor of Architectural Technology and Construction Management, VIA University College
- Bachelor of Architectural Technology and Construction Management, Erhvervsakademi Sydvest
- Bachelor of Architectural Technology and Construction Management, Erhvervsakademiet Lillebælt
- Bachelor of Architectural Technology and Construction Management, Erhvervsakademi Sjælland
- Bachelor of Architectural Technology and Construction Management, Københavns Erhvervsakademi
- Bachelor of Technology Management and Marine Engineering, MARTEC (Maritime and Polytechnic University College)
- Bachelor of Technology Management and Marine Engineering, Aarhus Maskinmesterskole
- Bachelor of Technology Management and Marine Engineering, Fredericia Makinmesterskole
- Bachelor of Technology Management and Marine Engineering, SIMAX (Svendborg International Maritime Academy)
- Bachelor of Technology Management and Marine Engineering, Maskinmesterskolen København

Since the programme is offered in English, in addition to the above, the students must have competencies regarding English documented by Danish B level or internationally recognised tests, cf. Ministerial Order no. 258 of March 18, 2015 (the Admission Order).

From February 2019 Mathematics C or documentation of equivalent qualifications is required.

§ 8: THE PROGRAMME TITLE IN DANISH AND ENGLISH

The Master's program entitles the graduate to the designation Cand.tech. i sikkerhed og risikostyring. The English designation is: Master of Science (MSc) in Technology (Risk and Safety Management).

§ 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

At programmes 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. At programmes taught in English, it is assumed that the student can read academic text 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

Knowledge

- Has scientifically based knowledge about the risk management in projects and systems
- Understand the nature of probability, uncertainty, stochastic processes and independent and conditional probabilities
- Has knowledge about different decision making tools such as Bayesian networks, decision trees, cost benefit analyses and Monte Carlo simulations
- Understands the importance of ethical considerations in relation to applying cost benefit models and decision making tools when considering actions involving health and safety of people
- Understands the limitations of models/tools within risk/safety, especially in relation to the input data's validity and credibility
- Has knowledge about evacuation strategies, the principles and models behind evacuation simulation software and the influence of human behavior in emergencies
- Has an understanding of the jurisdiction of authorities in the field of risk and safety management and know how the legislation is organised in the context of a given project
- Has knowledge in one or more subject areas that is based on the highest international research within the field of risk and safety management.

Skills

- Can apply the scientific methods and tools as well as general skills related to employment within risk and safety management
- Can communicate research-based knowledge and discuss professional and scientific problems with peers as well as non-specialists, using the correct terminology in risk and safety management
- Can apply appropriate methods of analysis for investigating risk and safety issues in projects and systems
- Can select and apply appropriate tools to support decision making in a risk management framework
- Can identify possible emergency scenarios and are able to apply appropriate methods within each stage of emergency management to a given scenario
- Can apply tools to manage the complexity of a project in a systems engineering framework and use methods that allow early detection of possible failures in systems
- Can select and apply appropriate methods for solving a given problem in the field of risk and safety management and judge the results regarding their accuracy and validity
- Can identify scientific problems within risk and safety management and select and apply proper scientific theories, methods and tools for their solution
- Can develop and advance new analyses and solutions within risk and safety management

Competencies

- Can manage work-related situations that are complex and unpredictable, and which require new solutions
- Can initiate and implement discipline-specific as well as interdisciplinary cooperation and assume professional responsibility
- Can take responsibility for own professional development and specialization.

§ 17: STRUCTURE AND CONTENTS OF THE PROGRAMME

The programme is structured in modules and organized as a problem-based study. A module is a programme element or a group of programme 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 programme 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
- study groups
- exercises (individually and in groups)
- laboratory tests
- measurements and testing in the field
- teacher feedback
- reflection
- portfolio work
- independent study

The modules are evaluated either through written or oral exams as stated in the description of the modules.

For individual written exams the study board selects among the following possibilities:

- Written exam based on handed out exercises
- Multiple choice
- Ongoing evaluation of written assignments

For individual oral exams the study board selects among the following possibilities:

- Oral exam with or without preparation
- Oral exam based on project report (individually graded through group exam)
- Oral exam based on presentation seminar
- Portfolio based oral exam

If the number of students following a module is small and/or if the number of students having to attend a re-exam is small the study board can decide that an exam is conducted either as an oral or written individual exam for economic reasons. In the first case decision must be notified before the start of the teaching activity, in the latter case the students must be notified when the examination date is decided.

1st to 4th semesters of the programme are taught in English and projects are to be written in English. However, the programme can be taught in Danish if no international students are enrolled.

§ 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).

Of a total of 120 ECTS, 80/85 ECTS are assessed by the 7-point scale and 45 ECTS are assessed by external examination. Furthermore it is possible to obtain 10 ECTS through elective courses on the second and third semesters.

Offered as:

Study programme: Technology in Risk and Safety Management

Module name	Course type	ECTS	Applied grading scale	Evaluation method	Assessment method	Language
1 SEMESTER						
Industry Standards and Legislation	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Systems Engineering	Course	5	Passed/Not Passed	Internal examination	Written exam	English
Applied statistics and Probability Theory	Course	5	7-point grading scale	Internal examination	Written exam	English
Risk Analysis	Course	5	Passed/Not Passed	Internal examination	Written exam	English
2 SEMESTER						
Risk Analysis and Management	Project	15	7-point grading scale	External examination	Oral exam based on a project	English
Risk Management	Course	5	Passed/Not Passed	Internal examination	Written exam	English
Decision Making	Course	5	Passed/Not Passed	Internal examination	Oral exam	English
2. semester Electives: Courses		5				
3 SEMESTER						
Operational Risk Management in Projects	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Simulation of Emergencies	Course	5	Passed/Not Passed	Internal examination	Written exam	English
Emergency Management	Course	5	Passed/Not Passed	Internal examination	Oral exam	English
3. semester Electives: Courses		5				
4 SEMESTER						
Master's Thesis	Project	30	7-point grading scale	External examination	Master's thesis/final project	Danish and English

2. semester Electives: Courses

Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method	Language
Maintenance Management	Course	5	Passed/Not Passed	Internal examination	Oral exam based on a project	English
Risk Communication	Course	5	7-point grading scale	Internal examination	Written or oral exam	English

3. semester Electives: Courses

Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method	Language

Risk and Reliability in Engineering	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Health and Safety Management	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English

The modules from ***2. semester Electives: Courses*** and ***3. semester Electives: Courses*** will not be given with a small number of students.

§ 19: ADDITIONAL INFORMATION

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 spelling and formulation 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 Board of Studies 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 must be in Danish.** The summary must be at least 1 page and not more than 2 pages. The summary is included in the evaluation of the project as a whole.

* Or another foreign language (upon approval from the Board of Studies).
** The Board of Studies can grant exemption from this.

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
In the individual case, the Board of Studies can approve successfully completed (passed) programme elements from other Master's programmes in lieu of programme elements in this programme (credit transfer). The Board of Studies 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 Board of Studies based on an academic assessment. See the Joint Programme Regulations for the rules on credit transfer.

Rules for examinations
The rules for examinations are stated in the Examination Policies and Procedures published by The Technical Faculty of IT and Design, The Faculty of Engineering and Science, and the Faculty of Medicine on their website.

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's website.

Exemption
In exceptional circumstances, the Board of Studies 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.

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

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the Dean of the Faculty of Engineering and Science and enters into force as of February 2018.

Students who wish to complete their studies under the previous curriculum from 2014 must conclude their education by the winter examination period 2019 at the latest, since examinations under the previous curriculum are not offered after this time.

§ 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS

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

April 9, 2019: Starting from February 2019 Mathematics C or documentation of equivalent qualifications is required.