AALBORG UNIVERSITET

CURRICULUM FOR THE MASTER'S PROGRAMME IN TECHNOLOGY IN RISK AND SAFETY MANAGEMENT, 2022

MASTER OF SCIENCE (MSC) IN TECHNOLOGY
ESBJERG

Link to this studyline

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

Curriculum for the Master of Science in Technology in Risk and Safety Management, 2021
Curriculum for the Master of Science in Technology in Risk and Safety Management, 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 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 Study Board of Build, Energy, Electronics and Mechanics in Esbjerg, Aalborg University.

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme falls under the external examiners corps on Civil engineering corps of external examiners.

§ 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 Engineering in Emergency and Risk Management, University College Copenhagen
- Bachelor of Engineering in Global Management and Manufacturing, University of Southern Denmark
- Bachelor of Engineering in Energy Management (top-up programme), University College Nordjylland
- 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. 153 of February 26, 2020 (the Admission Order).

In order for a bachelor education to be considered relevant, it should include a minimum of 30 ECTS points within one or more of the following topics:

- Philosophy of science, epistemology, mathematics and/or statistics, communication and dissemination methods, learning methods.

§ 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.studyservice.aau.dk/rules

§ 12: RULES FOR EXAMINATIONS

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

§ 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 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
- Can utilize and create digital solutions for data collection and storage, statistical data analysis, data visualization, modeling and simulation, for presentation of theories, hypotheses and results in writing as well as orally, as well as for organizing and implementing the collaboration internally in project groups as well as with external partners.

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.
- Must be able to assess and relate the content of the project to those of the UN World Goals that are relevant
- Has competencies within and can participate in the development of digitization of the built environment and can digitally and effectively collaborate, communicate and exchange information, data and results with adjacent disciplines

§ 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

§ 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: 1-professional 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 (B-RSK-K1-5)	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Systems Engineering (B-RSK-K1-1)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Applied statistics and Probability Theory (B-RSK-K1-2)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Risk Analysis (B-RSK-K1-3)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
2 SEMESTER						
Risk Analysis and Management (B-RSK-K2-10)	Project	15	7-point grading scale	External examination	Oral exam based on a project	English
Risk Management (B-RSK-K2-5)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Decision Making (B-RSK-K2-6)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
2. semester Electives: Courses		5				
3 SEMESTER						
Operational Risk Management in Projects (B-RSK-K3-14)	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Simulation of Emergencies (B-RSK-K3-10)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Emergency Management (B-RSK-K3-11)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
3. semester Electives: Courses		5				
4 SEMESTER						
Master's Thesis (B-RSK-K4-15)	Project	30	7-point grading scale	External examination	Master's thesis/final project	English

2. semester Electives: Courses						
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method	Language

Maintenance Management (B-RSK-K2-8)	Course	5	Passed/Not Passed	Internal examination	Oral exam based on a project	English
Health and Safety Management (B-RSK-K3-13)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Integration of Risk, Resilience and Sustainability (B-RSK-K2-16)	Course	5	Passed/Not Passed	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 (B-RSK-K3-12)	Course	5	Passed/Not Passed	Internal examination	Written or oral exam	English
Risk Communication (B-RSK-K2-7)	Course	5	7-point grading scale	Internal examination	Written or oral exam	English

The modules from ***2. semester Electives: Courses*** will not be given with a small number of students. In that case, the students will be offered other alternatives.

§ 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 visit this **website**.

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

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

The Study Board does not offer teaching after the previous curriculum from September 2021 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

23 August 2023: The Vice-dean of education has approved that the form of assessment changes to "Written or oral Exam" in the following modules: System Engineering, Apllied statistics and Probability Theory, Risk Analysis, Risk Management, Decision Making, Simulation of Emergencies and Emergency Management. The amendment is valid from Autumn 2023.