AALBORG UNIVERSITET

MASTER OF SCIENCE (MSC) IN ENGINEERING (ELECTRO-MECHANICAL SYSTEM DESIGN) 2017

MASTER OF SCIENCE (MSC) IN ENGINEERING
AALBORG

Link to this studyline

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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 Electro-Mechanical System Design is stipulated. The programme also follows the Joint Programme Regulations and the Examination Policies and Procedures for the 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. 111 of January 30, 2017 (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 the The Faculty of Engineering and Science, Aalborg University.

§ 5: STUDY BOARD AFFILIATION

The Master's programme falls under the 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 Nationwide engineering examiners/Machine.

§ 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 programme

Applicants without legal right of admission:

Bachelor's programmes qualifying students for admission:

- Bachelor of Science in Mechanical Engineering and Manufacturing, Aalborg University

Students with another Bachelor degree may, upon application to the Board of Studies, be admitted following a specific academic assessment if the applicant is considered as having 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 programme entitles the graduate to the Danish designation Civilingeniør, cand.polyt. i elektro-mekanisk systemdesign. The English designation is: Master of Science (MSc) in Engineering (Electro-Mechanical System Design).

§ 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 is able to 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 gained an extensive knowledge within the areas related to analysis and design of electro mechanical systems.

- Has knowledge in one or more subject areas that, in selected areas within electronic, mechanical or control engineering, are based on the highest international research in the subject areas.
- Can understand and, on a scientific basis, reflect over the subject areas within electro mechanical system design and identify scientific problems.

Skills

- Excels in the subject areas, scientific methods and tools and general skills related to employment within the subject area.
- Can evaluate and select among the subject area's(s') scientific theories, methods, tools and general skills and, on a scientific basis, advance new analyses and solutions.
- Can communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists.

Competencies

- Can, on a highly qualified manner, take part in technical development and research.
- 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 MSc programme in Electro-Mechanical System Design aims at educating graduates who are qualified to take part in technical development and research and who are able to direct the technical management of development projects within the industry.

The graduates are expected to have gained a broad knowledge within the areas of mechatronic system design, modelling and analysis of electro mechanical systems, information technology and control theory. Emphasis will be put on disciplines such as modelling of multi domain systems, simulation, system optimisation, and control engineering.

The programme is structured in modules and organised 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 defined in the curriculum.

The programme 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:

Module name	Course type	ECTS	Applied grading scale	Evaluation method	Assessment method	Language
1 SEMESTER						
Electrical and Fluid Power Servomechanisms	Project	15	7-point grading scale	External examination	Oral exam based on a project	English
Control of Fluid Power and Electrical Servomechanisms	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Embedded Micro Processors: Applications and C Programming	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Finite Element Methods	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
2 SEMESTER						
Electrical and Fluid Power Servomechanisms	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Engineering Optimization – Concepts, Methods and Applications	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
Multi Variable Control	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
AC Motor Drives: Converters and Control	Course	5	7-point grading scale	Internal examination	Written or oral exam	English
3 SEMESTER Elective track A						
Industrial Development	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
Elective courses Recommended elective courses	Course	15				
3 SEMESTER Elective track B						
Industrial Development	Project	20	7-point grading scale	Internal examination	Oral exam based on a project	English
Elective courses Recommended elective courses	Course	10				
3 SEMESTER Elective track C						
Industrial Development	Project	25	7-point grading scale	Internal examination	Oral exam based on a project	English
Elective courses Recommended elective courses	Course	5				
3 SEMESTER Elective track D						
Industrial Development	Project	30	7-point grading scale	Internal examination	Oral exam based on a project	English
3 SEMESTER Elective track E						
Academic Internship	Project	15	7-point grading scale	Internal examination	Oral exam based on a project	English
	Course	15				

Elective courses Recommended elective courses						
3 SEMESTER Elective track F						
Academic Internship	Project	20	7-point grading scale	Internal examination	Oral exam based on a project	English
Elective courses Recommended elective courses	Course	10				
3 SEMESTER Elective track G						
Academic Internship	Project	25	7-point grading scale	Internal examination	Oral exam based on a project	English
Elective courses Recommended elective courses	Course	5				
3 SEMESTER Elective track H						
Academic Internship	Project	30	7-point grading scale	Internal examination	Oral exam based on a project	English
3-4 SEMESTER Long thesis, option A						
45 ECTS Master's Thesis	Project	45	7-point grading scale	External examination	Master's thesis/final project	English
Elective courses Recommended elective courses	Course	15				
3-4 SEMESTER Long thesis, option B						
50 ECTS Master's Thesis	Project	50	7-point grading scale	External examination	Master's thesis/final project	English
Elective courses Recommended elective courses	Course	10				
3-4 SEMESTER Long thesis, option C						
Long Master's Thesis	Project	60	7-point grading scale	External examination	Master's thesis/final project	English
4 SEMESTER						
Master's Thesis	Project	30	7-point grading scale	External examination	Master's thesis/final project	English

Elective courses
Recommended elective courses

Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method	Language
System Identification and Diagnosis	Course	5	7-point grading scale	Internal examination	Oral exam	English
Non-linear Control and Multi-body Systems	Course	5	7-point grading scale	Internal examination	Written or oral exam	English

Test and Validation	Course	5	Passed/Not Passed	Internal examination	Written and oral exam	English

The 3rd semester offers different ways of organisation – depending on the student's choice of content; project work at Aalborg University, study visit at an educational institution in Denmark or abroad, voluntary traineeship with project work at a company in Denmark or abroad, or a semester programme that comprises cross-disciplinary programme elements composed by the student. The total work load of the semester must be equivalent to 30 ECTS of which up to 15 ECTS can be elective courses. The project may be finalised with a project report or in the form of a scientific paper, or, if the project is continued on the 4th semester, with a midterm evaluation. For further information about the organisation of the module, please see the Joint programme regulations and the study guide for the MSc programme in Electro-Mechanical System Design.

The academic traineeship has to be approved by the study board before the beginning of the semester.

On the 4th semester, the Master's Thesis is completed. The Master's Thesis may be combined with the 3rd semester in an extended Master's Thesis. If choosing to do a long master thesis, it has to include experimental work and has to be approved by the study board.

§ 19: ADDITIONAL INFORMATION

The current version of the curriculum is published on the study board's website, including more detailed information about the programme, 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.

§ 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 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

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