



Curriculum for

Master of Science (MSc) in Engineering (Operations and Supply Chain Management)

Aalborg University
September 2015

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Preface:

Pursuant to Act 960 of 14 August 2014 on Universities (the University Act) with subsequent changes, the following curriculum for the Master's programme in Operations and Supply Chain Management is stipulated. The programme also follows the Framework Provisions and the Examination Policies and Procedures for the Faculties of Engineering, Science and Medicine.

AAU, December 2014

Jens Christian M. Rauhe
Chairman of the Study Board

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Chapter 1: Legal Basis of the Curriculum, etc.

1.1 Basis in ministerial orders

The Master's programme in Operations and Supply Chain Management is organised in accordance with the Ministry of Science, Innovation and Higher Education's Order no. 1520 of December 16, 2013 on Bachelor's and Master's Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 1518 of December 16, 2013 on University Examinations (the Examination Order) with subsequent changes. Further reference is made to Ministerial Order no. 1488 of December 16, 2013 (the Admission Order) and Ministerial Order no. 250 of March 15, 2007 (the Grading Scale Order) with subsequent changes.

1.2 Faculty affiliation

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

1.3 Board of Studies affiliation

The Master's programme falls under the Board of Studies for Industry and Global Business Development

1.4 Body of External Examiners

The Master's programme falls under the Body of External Examiners of higher education in engineering (mechanical engineering).

Chapter 2: Admission, Degree Designation, Programme Duration and Competence Profile

2.1 Admission

Admission to the Master's programme in Operations and Supply Chain Management requires a Bachelor of Science or Bachelor of Engineering degree in Global Business Engineering (GBE) or the like. (Production Management, Operations Management, Logistics Management, Supply Chain Management).

Students with another Bachelor's degree can 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.

Further, applicants shall document English skills corresponding to a B level.

2.2 Degree designation in Danish and English

The Master's programme entitles the graduate to the designation *civilingeniør, cand.polyt. (candidatus/candidata polytechnices) i virksomhedssystemer*. The English designation is: Master of Science (MSc) in Engineering (Operations and Supply Chain Management).

2.3 The programme's specification 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.

2.4 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 on the basis of 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.

2.5 Competence profile of the programme:

The graduate of the Master's programme:

Knowledge

- Has attained understanding of a broad range of theory, models, methods and techniques within the area of operations and supply chain management and systems
- Has knowledge of one or more subject areas that in selected areas within operations and supply chain management and systems are based on the highest international research in a subject area
- Can understand and, on a scientific basis, reflect over subject areas related to operations and supply chain management and systems and identify scientific problems within that area
- Can demonstrate understanding of research work and be able to become a part of the research environment
- Can demonstrate insight into the implications of research work, including research ethics.

Skills

- Is able to apply scientific methodology to solving a wide variety of problems within the field of specialisation
- Is able to perform scientific work in relevant topics of the field of the specialisation
- Is able to apply a wide range of methods in research and development projects in the field of specialisation
- Is able to participate in or lead projects in development of operations and supply chain management systems, flexible manufacturing, development of quality, risk, and project management systems, supply chain operations, manufacturing and supply chain systems, business intelligence and analytics, and global manufacturing management
- Can communicate research-based knowledge and discuss professional and scientific problems with both peers and non- specialists.

Competencies

-
- Is able to work independently and in groups with a project on a specific problem within his/her field of interest on the highest possible level within his/her specialisation
- Is able to take part in technical development and research
- Can manage work and development situations that are complex, unpredictable and require new solutions within the area of operations and supply chain management systems
- Can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- Is able to direct the management of development projects within the industry
- Is competent to solve new and complicated problems by the use of advanced mathematics, scientific, economics, organisational and technological knowledge
- Can independently take responsibility for own professional development and specialisation.

Chapter 3: Content and Organization of the Programme

The MSc programme in Operations and Supply Chain Management aims at providing the graduates with competences to solve complex operational problems. Furthermore, the graduates are expected to be able to develop and construct managerial control systems which can be used in preparation and implementation in an industrial production context. The learned methods and principles are also applicable to a number of service trades. The fields of work are addressed from different perspectives; systems, operations, economics, organisation and management. Moreover, relevant technological methods, including the use of information technology, are included in the programme.

The course of study may, dependent on the choice of project, be designed individually within the framework of the programme.

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.

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 academic internship 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 may 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 Framework Provisions, chapter 9.4.1., and the study guide for the MSc programme in Design of Mechanical Systems.

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.

Overview of the programme:

All modules are assessed through individual grading according to the 7-point scale. All modules are assessed by external examination (external grading) or internal examination (internal grading or by assessment by the supervisor only).

Semester	Module	ECTS	Assessment	Exam
1st	Operations Management	15	7-point scale	Internal
	Advanced Operations Management	5	7-point scale	Internal
	Development of Quality, Risk, and Project Management Systems 1	5	7-point scale	Internal
	Flexible Manufacturing	5	7-point scale	Internal
2nd	Supply Chain Operations	15	7-point scale	External
	Manufacturing and Supply Chain Systems	5	7-point scale	Internal
	Business Intelligence and Analytics	5	7-point scale	Internal
	Development of Quality, Risk, and Project Management Systems 2	5	7-point scale	Internal
3rd	Global Manufacturing Management ¹	30 ²	7-point scale ³	
4th	Master's Thesis	30	7-point scale	External
Total		120		

¹ Students are given several choices of composing an individual planned semester, including extending the master's thesis to up to 60 ECTS. Combination of project and courses (see note 2), internship, semester at other university.

² The project must be equivalent to at least 15 ECTS. Course modules approved by the Study Board for the specific study must supplement to a total of 30 ECTS.

³ By agreement with the Study Board of Industry and Global Business Development, the project may be reduced to allow for participation in course activities. However, the project must encompass at least 15 ECTS. Proposed course activity is evaluated and tested in accordance with the curriculum in which the course module is described.

3.2 Operations and Supply Chain Management, 1st semester

3.2.0 Course in Problem Based Learning and Student Responsibilities at Aalborg University

Title:

Problem Based Learning and Student Responsibilities at Aalborg University

Prerequisites:

None, but the course is compulsory for students not acquainted to the Aalborg PBL model

Objective:

Students who complete the module should:

Knowledge:

- Have knowledge about the organization at Aalborg university and where to get help in different matters
- Have knowledge about how to communicate both in your project groups but also when attending courses
- Have comprehension for how a semester is structured and about the different examination forms we use at Aalborg University
- Have comprehension for how project work and laboratory work is carried out at Aalborg University including safety issues in the laboratory
- Have comprehension for issues concerning plagiarism and the consequence when doing plagiarism
- Have knowledge about the software which are used in the study
- Have knowledge about the IT systems used and how to get started
- Have knowledge about the students counselor and what they can do

Skills:

- Be able to use problem based learning and perform group work when doing projects and courses at Aalborg University
- Be able to use Moodle i. e. for finding lecture plans, time schedules etc.

Competences

- Be able to apply the concepts, theories and methods for problem based learning and group work
- Be able to account for the considerations involved in the process of formulating project reports in practice.

Type of instruction:

Lectures, discussions and group work. The course will take place on Wednesday afternoons.

Form of examination:

Internal assessment during the course/class participation according to the rules in the Examination Policies and Procedures, Addendum to the Framework Provision of Faculty of Engineering and Science, Aalborg University. In this case the assessment is primarily based on the oral performance during the course, this means that the student has to be active during the course time and participate in discussions. The course is an integrated part of the project for those not acquainted to the Aalborg PBL model, and is a precondition for participation in the project examination. In this way there will be no diploma for the course and it will not be visible on the academic transcripts.

Evaluation criteria:

Passed/not passed as stated in the Framework Provisions

3.2.1 Operations Management (15 ECTS)

Title: Operations Management
(Planlægning og styring)

Prerequisites: Students holding a bachelor degree from another university than Aalborg University must pass the course: Problem Based Learning and Student Responsibilities at Aalborg University, prior to sitting the exam.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained in-depth knowledge of using quantitative Operations Management techniques on real life problems. The knowledge could be gained in a development project:
 - With one or more companies or public organisations
 - or
 - In a lab environment concerning Operations Management software or techniques.

Skills

- Be able to demonstrate the usage and limitations of quantitative Operations Management techniques
- Be able to compare and evaluate theoretical and experimental results
- Be able to critically evaluate applied methods and their results.

Competences

- Possess the ability to identify and implement options for improvements with special focus on cross-functional issues (e.g. in between sales, operations, development or service)
- Be able to implement Operations Management techniques in an industrial, service or public organisation.

Type of instruction: The module is carried out as group-based, problem-oriented project work. The group work is carried out as an independent work process in which the students themselves organise and coordinate their workload in collaboration with a supervisor. The project is carried out in groups with normally no more than 6 members.

Exam format: Oral examination based on a written report.

Evaluation criteria: Are stated in the Framework Provisions.

3.2.2 Advanced Operations Management (5 ECTS)

Title: **Advanced Operations Management**
(Udvidedede teknikker til planlægning og styring)

Prerequisites: None.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained both theoretical and practical knowledge about stochastic simulation and its utilisation in improvement of planning and control systems in companies and supply chains
- Have gained knowledge of a number of numerical and mathematical methods and models for designing and improving planning and control concepts in companies and supply chains
- Have gained knowledge and understanding about numerical analysis of demand patterns
- Have gained knowledge about advanced order management systems
- Have gained knowledge about stochastic discrete event simulation and simulation tools
- Have gained knowledge to identify key performance indicators relevant to evaluate stochastic simulation models.

Skills

- Be able to analyse and develop order management systems for both industrial and service companies
- Be able to conduct a numerical analysis of a company's and supply chain's performance. This involves both choice and utilisation of statistical analysis methods on selected elements of companies and supply chains
- Show understanding the utilisation of probabilistic models in connection with design and usage of planning and control systems. This includes knowledge and insight into the opportunities and limitations of probabilistic models
- Be able to utilise stochastic discrete event simulation to assess opportunities and limitations of a production system and be able to utilise simulation as a tool for analysis and synthesis in their project work
- Be able to be model and simulate a specific company's production system and evaluate the performance of this system
- Be able to design and redesign planning and control systems in production and service management companies and supply chains adapted to a company's or supply chain's specific situation.

Competences

- Be able to combine a number of mathematical tools in an appropriate manner to conduct an analysis of the as-is situation of a company or supply chain.

Type of instruction: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops
- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Exam format: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: Are stated in the Framework Provisions.

3.2.3 Flexible Manufacturing (5 ECTS)

Title: Flexible Manufacturing
(Fleksibel produktion)

Prerequisites None.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained knowledge about mass customization systems in an operations management context
- Have gained knowledge about assessment of mass customization performance
- Have gained knowledge about product architecture, manufacturing architecture and their relations to mass customization
- Have gained knowledge about flexible manufacturing systems, reconfigurable manufacturing systems, changeable manufacturing systems, automated manufacturing systems and the differences between these.
- Have gained knowledge of planning methods designed specifically for flexible manufacturing systems.

Skills

- Be able to analyze a product family in terms of variety and product architecture
- Be able to evaluate different IT solutions supporting mass customization, including product configurators and perform basic modelling
- Be able to analyze a range of manufacturing tasks and evaluate different types of manufacturing systems to determine the appropriate level of flexibility vs. automation
- Be able to model flexible manufacturing problems

Competencies

- Have the competence to evaluate a company's product portfolio in terms of volume, variety and manufacturing tasks and identify solutions for IT system support and manufacturing system design.

Type of instruction: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops
- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Exam format: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: Are stated in the Framework Provisions.

3.2.4 Development of Quality, Risk, and Project Management Systems 1 (5 ECTS)

Title: Development of Quality, Risk, and Project Management Systems 1
(Udvikling af kvalitets-, risiko - og projektstyringsystemer 1)

Prerequisites: The student must meet the admission requirements described in chapter 2.1.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained knowledge of theories of quality control; business processes and supply chains
- Have gained knowledge of project planning and control as well as techniques for this
- Have gained knowledge of IT-systems for project planning and control
- Have gained knowledge of financial control of activities in engineer/manufacture to order companies with long project durations.

Skills

- Be able to understand quality control in relation to the company's business processes and analyse an organisation's need for quality control emphasising the supply chain, as well as give suggestions to changes and improvements of parts of or the entire system
- Be able to understand financial control of activities in engineer/manufacture to order companies. This includes: liquidity control, financial capacity control and calculations for planning, control and follow-up on the company's order-based production
- Be able to understand resource-constrained project management problems and plan the execution of projects under constraints (e.g. budgetary, time, resource), including the use of methods for project planning and control
- Be able to understand how IT-systems can support business processes and work flows in project-driven companies.

Competences

- Be able to design quality and project management systems in companies with order based production while taking into account how such systems interact with a company's core activities and other control systems, especially the financial control systems
- Be able to specify projects and constraints as well as problems which may arise in project-driven companies
- Be able to use the attained knowledge in regards to how companies develop quality control systems.

Type of instruction: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops

- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Exam format: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: Are stated in the Framework Provisions.

3.3 Operations and Supply Chain Management, 2nd semester

3.3.1 Supply Chain Operations (15 ECTS)

Title: Supply Chain Operations
(Styring af forsyningskæder)

Prerequisites: 1st semester of the MSc in Operations and Supply Chain Management programme.

Objective: Students who completewill:

Knowledge

- Have gained in-depth knowledge of using supply chain operations on real life problems. The knowledge could be gained in a development project:
 - With one or more companies or public organisations
 - or
 - In a lab environment concerning supply chain software or techniques.

Skills

- Be able to demonstrate the usage and limitations of supply chain operations
- Be able to compare and evaluate theoretical and experimental results
- Be able to critically evaluate applied methods and their results.

Competences

- Possess the ability to identify and implement options for improvements with special focus on cross-company issues (e.g. one or more customers or suppliers)
- Be able to implement supply chain operations in an industrial, service or public organisation.

Type of instruction: The module is carried out as group-based, problem-oriented project work. The group work is carried out as an independent work process in which the students themselves organise and coordinate their workload in collaboration with a supervisor. The project is carried out in groups with normally no more than 6 members.

Exam format: External, oral examination based on a written report.

Evaluation criteria: Are stated in the Framework Provisions.

3.3.2 Manufacturing and Supply Chain Systems (5 ECTS)

Title: Manufacturing and Supply Chain Systems
(Fremstillings- og forsyningskædesystemer)

Prerequisites: 1st semester of the MSc in Operations and Supply Chain Management programme.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained knowledge of the structure and functionality of manufacturing and supply chain systems such as Enterprise Resource Planning, Advanced Planning & Scheduling, Vendor Managed Inventory, Optimisation Suites and Shop Floor Planning & Control
- Have gained knowledge of planning technologies and configuration of manufacturing and supply chain systems
- Have gained knowledge of how to share information and coordinate decisions in a supply chain

Skills

- Be able to work with differentiated manufacturing and supply chain control
- Be able to work with manufacturing and supply chain control principles
- Be able to work with information sharing levels

Competences

- Be able to select and design differentiated manufacturing and supply chain control principles
- Be able to develop planning and control solutions

Type of instruction: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops
- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Exam format: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: Are stated in the Framework Provisions.

3.3.3 Business Intelligence (5 ECTS)

Title: **Business Intelligence and Analytics**
(Business intelligence og analytiske metoder)

Prerequisites: 1st semester of the MSc in Operations and Supply Chain Management programme.

Goal: Students who complete the module are expected to:

Knowledge

- Have gained in-depth understanding of Business Intelligence (BI) concepts, theories and methods including:
 - Creation of knowledge from either people/employees/"experts" or from analysing existing data
 - Knowledge representation
 - Traditional BI handling systems such as expert systems, knowledge base systems, decision support systems and executive information systems.

Skills

- Be able to make decisions about optimal use of the BI, theories, methods and selected systems for identification of needs, development of alternative solutions, evaluation selection and implementation
- Be able to use BI in disciplines such as enterprise engineering/modelling, business analytics, data mining, etc.

Competences

- Be able to apply knowledge and skills in relation to business intelligence development projects and thereby apply the knowledge handling activities: knowledge acquisition, knowledge verification, knowledge representation and knowledge engineering.

Teaching Method: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops
- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Form of examination: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: As stated in the Framework Provisions.

3.2.4 Development of Quality, Risk, and Project Management Systems 2 (5 ECTS)

Title: Development of Quality, Risk, and Project Management Systems 2
(Udvikling af kvalitets-, risiko- og projektstyringssystemer 2)

Prerequisites: 1st semester of the MSc in Operations and Supply Chain Management programme.

Objective: Students who complete the module are expected to:

Knowledge

- Have gained knowledge of a range of selected models and methods in the area of quality and project management, including:
 - Planning, control and optimising in multi-project environments
 - Models, methods and tools to develop advanced quality, environmental and project management systems
 - Risks management and performance measurements.
- Have gained knowledge of how quality, project and management accounting systems can be incorporated as strategic elements in a company
- Have gained knowledge of how quality, project and management accounting systems can be integrated with a company's other management systems
- Have gained knowledge of risk identification and risk management in ETO productions, and how such risks can be addressed as a strategic business advantage.

Skills

- Be able to analyse an organisation's need for quality and project management, internal as well as external in relation to customers and suppliers
- Be able to analyse a group of projects with simultaneous lifetime and to evaluate existing project portfolios
- Be able to apply advanced methods and models in the improvement suggestions for an organisation's current quality and project management systems
- Be able to identify and analyse risk factors for project portfolios and understand risk management systems, also with a strategic focus
- Be able to evaluate the effect of the implementation of suggested methods and models.

Competences

- Be able to understand and identify the connection between the quality system and a company's other control systems as well as relations to suppliers and customers in the value chain
- Be able to design and understand project management systems with conflicting success criteria, limited resources available and limited budgets
- Be able to analyse risk factors for a project portfolio, understand risk management systems and to turn risks into business opportunities.

Teaching method: The course consists of a number of lectures as well as the student's independent learning effort. The form and extent of the course is determined and described in connection with planning the semester. The lesson plans, literature etc. are created in connection with this. The course is conducted as a combination of single-disciplinary, problem-oriented and cross-disciplinary

fields of study, and it is structured from a work and evaluation form which combines skills and reflection:

- Lectures
- Class work
- Project work
- Workshops
- Exercises (alone and in groups)
- Teacher feedback
- Reflection on content
- Portfolio work.

Exam format: Internal oral or written examination according to the decision of the study board.

Evaluation criteria: Are stated in the Framework Provisions.

3.4 Operations and Supply Chain Management, 3rd semester

3.4.1 Global Manufacturing Management (30 ECTS)

Title: Global Manufacturing Management
Global udvikling af virksomheden

Prerequisites: 2nd semester of the MSc in Operations and Supply Chain Management programme..

Goal: Students who complete the module are expected to:

Knowledge

- Have gained knowledge and understanding of Global Manufacturing Management
- Be able to understand and apply advanced analysis for evaluating Global Manufacturing Management systems and structures
- Be able to understand and apply advanced synthesis for Global Manufacturing Management.

Skills

- Be able to describe the problem solved and the criteria applied for its solution
- Be able to evaluate the concepts, theories and methodologies applied in the solution of the problem
- Be able to account for the choices made during the solution of the problem, and substantiate that these are made on a high professional level
- Be able to assess the limitations of the concepts, theories, and methodologies applied in the solution of the problem.

Competences

- Be able to analyse and solve an actual problem of industrial relevance through application of systematic research and development processes, including advanced analytical, experimental and/or numerical methods and models.

Organisation: Dependent on student's choice of content and organisation of the semester; the student may choose between project work at Aalborg University or a voluntary traineeship at a company in Denmark or abroad. The total work load of the semester has to be equivalent to 30 ECTS. If carried out at Aalborg University, the project may be finalised with a project report or in the form of a scientific paper. If continued at the 4th semester, the project is evaluated with a midterm evaluation. For further information about the organisation of the module please see the Framework Provisions.

Teaching Method: Dependent on student's choice of content and organisation of the semester

- If the semester is carried out as an academic internship, the student is included in the company's daily work. Concurrent to the work in the company, the student makes a report, which is evaluated after ending the academic internship
- The project work is carried out as an independent work process in which the students themselves organise and coordinate their workload in collaboration with a supervisor. The project may be carried out individually or in groups.

Form of examination: Oral examination based on a written report.

Evaluation criteria: As stated in the Framework Provisions.

3.5 Operations and Supply Chain Management, 4th semester

3.5.1 Master's Thesis (30 ECTS)

Title: **Master's Thesis**
(Kandidatspeciale)

Prerequisites: Successful conclusion of the first three semesters of the Operations and Supply Chain Management programme. Exemptions to this rule can be given, but only by decision of the Study Board of Industry and Global Business Development.

Goal: Students who complete the module are expected to:

Knowledge

- Have attained thorough understanding of a broad range of theoretical, numerical and experimental models, methods and techniques within the area of design of Operations and supply chain management systems.

Skills

- Be able to apply scientific methodology to solving a wide variety of problems within the field of specialisation
- Be able to perform scientific work in relevant topics of the field of the specialisation
- Be able to apply a wide range of engineering methods in research and development projects in the field of specialisation
- Be able to participate in or lead projects in Operations and supply chain management systems, Operations Development and Strategy, Development of Quality and Project Management Systems, Supply Chain Operations, Manufacturing and Supply Chain Systems, Business Intelligence and Global Manufacturing Management.

Competences

- Be able to work independently with a project on a specific problem within their field of interest on the highest possible level within their specialisation
- Be able to take part in both discipline-specific and interdisciplinary cooperation
- Be able to take part in development and research in the field of specialisation
- Be able to direct the technical management of development projects in manufacturing companies
- Be competent to solve new and complicated technical problems by the use of advanced mathematics, scientific, economic, organisational and technological knowledge.

Teaching Method: In this module, the Master's Thesis is carried out. The module constitutes independent project work and concludes the programme. Within the approved topic, the Master's Thesis must document that the level for the programme has been attained.

Form of examination: External, oral examination based on a written report.

Evaluation criteria: As stated in the Framework Provisions.

Chapter 4: Entry into Force, Interim Provisions and Revision

The curriculum is approved by the Dean of the Faculty of Engineering and Science and enters into force as of September 2015.

Students who wish to complete their studies under the previous curriculum from 2013 must conclude their education by the summer examination period 2016 at the latest, since examinations under the previous curriculum are not offered after this time.

In accordance with the Framework Provisions for the Faculty of Engineering and Science and The Faculty of Medicine at Aalborg University, the curriculum must be revised no later than 5 years after its entry into force.

Chapter 5: Other Provisions

5.1 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.⁴ If the project is written in English, the summary must be in Danish.⁵ 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.

5.2 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 Framework Provisions for the rules on credit transfer.

5.3 Rules for examinations

The rules for examinations are stated in the Examination Policies and Procedures published by the Faculties of Engineering, Science and Medicine on their website.

5.4 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.

⁴ Or another foreign language (upon approval from the Board of Studies).

⁵ The Board of Studies can grant exemption from this.

5.5 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.

Completion of the Master's programme

The Master's programme must be completed no later than four years after it was begun.

Rules and requirements concerning the reading of texts in foreign languages and a statement of the foreign language knowledge this assumes

It is assumed that the student can read academic texts in modern English and use reference works, etc., in other European languages.