Curriculum for the Master Programme in Operations and Supply Chain Management

Studieordning for kandidatuddannelsen i virksomhedssystemer

The Faculty of Engineering and Science

Aalborg University
2013

Preface
Pursuant to Act 652 of June 24, 2012 on Universities (the University Act) with subsequent changes, the following curriculum for the Master programme in Operations and Supply Chain Management is stipulated. The programme also follows the Framework Provisions and the Examination Policies and Procedures for the Faculty of Engineering and Science.

Table of Contents

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, Technology and Innovation's Ministerial Order no. 814 of June 29, 2010 on Bachelor and Master Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 666 of June 24, 2012 on University Examinations (the Examination Order) with subsequent changes. Further reference is made to Ministerial Order no. 241 of March 15, 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 and Science, Aalborg University.

1.3 Board of Studies Affiliation
The Master's programme falls under the Board of Studies for Industry and Global Business Development under the School of Engineering and Science. The Master's programme is affiliated with the external examiner body of mechanical engineering.

1.4 External Examiners
The programme is affiliated to Ingeniøruddannelsernes landsdækkende censorkorps (maskin).

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

2.1 Admission
Admission to the Master 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).

Furthermore, admission to the programme requires documented English skills at a Danish B level or the like.

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.

2.2 Degree Designation in Danish and English
The Master programme entitles the graduate to the Danish 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 programme is a 2-year, research-based, full-time study programme. The programme is set to 120 ECTS credits.

2.4 Competence Profile in the Diploma
The following competence profile will appear in the diploma:

> A graduate of the Master programme has competences acquired through an educational programme that has taken place in a research environment.
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> The graduate of the Master programme can perform highly qualified functions on the

labour market on the basis of the educational programme. Moreover, the graduate has prerequisites for research (a PhD programme). Compared to the Bachelor degree, the graduate of the Master programme has developed her/his academic knowledge and independence, so that the graduate can independently apply scientific theory and method in both an academic and occupational/professional context.

2.5 Competence Profile of the Programme

The graduate of the Master 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, 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 • Can communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists.
Competences	• 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 Organisation 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 *or* Pass/Fail. All modules are assessed by external examination (external grading) or internal examination (internal grading or by assessment by the supervisor only).

Semester	Module	ECTS	Grading	Exam
1.	Operations Management	15	7-point scale	Internal
	Advanced Operations Management	5	7-point scale	Internal
	Operations Development and Strategy	5	7-point scale	Internal
	Development of Quality and Project Management Systems	5	7-point scale	Internal
2.	Supply Chain Operations	15	7-point scale	External
	Manufacturing and Supply Chain Systems	5	7-point scale	Internal
	Business Intelligence	5	7-point scale	Internal
	Development of Quality and Project Management Systems	5	7-point scale	Internal
3.*	Global Manufacturing Management[1]	15-30	7-point scale[2]	Internal
4.	Master's Thesis	30	7-point scale	External

* cf. Framework Provisions section 9.4.1, students are given several choices of composing an individual planned semester, including extending the master's thesis to up to 60 ECTS.

[1] 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.

[2] 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

3.2.1 Operations Management (15 ECTS)

Title: **Operations Management**
Operations Management

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 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**
Advanced Operations Management

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 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
- Be able 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.

The course is conducted in Danish and/or English.

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 Operations Development and Strategy (5 ECTS)

Title: **Operations Development and Strategy**
(Global produktionsudvikling og -strategi)

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

Objective: Students who complete the module are expected to have:

Knowledge

- A coherent and profound understanding of how and why operations globalise, including in-depth knowledge of the associated theories and strategies
- Insight into the strategic analysis and synthesis of global operations footprints including the understanding of: the strategic situation, the process of globalisation and the theory-based conceptualisation of operations strategy
- Knowledge of strategic configuration of operations, including: structures and infrastructures, the extended operations system and strategic capabilities
- Knowledge of strategic innovation in an operations-system context.

Skills

- Developed skills to evaluate different options and argue for specific choices for strategic design of global operations systems and operations development strategies, including recognising competitive opportunities, configuring operations capabilities, organisational processes and organisational designs
- Developed relevant skills to apply theories and methods for improvement and reorganisation of global operations
- Developed skills to identify and implement options for reorganisation and improvements in the context of global operations.

Competences

- Be able to discuss the complex problems associated with globalisation of operations to outline the different paths and strategies a company may choose
- Develop abilities to craft and implement relevant operations strategies.

Type of instruction: The learning objectives are realised via lectures, discussions and case work (see chapter 3).

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 and Project Management Systems (5 ECTS)

Title: **Development of Quality and Project Management Systems I**
(Udvikling af kvalitets- og projektstyringssystemer (I))

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 or the like.

Objective: Students who complete the module:

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**
(Manufacturing and Supply Chain Systems)

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

Objective: Students who complete the module are expected to:

Knowledge

- Have gained knowledge of the main area of manufacturing planning and control and related use of IT-Systems
- Have gained knowledge of the theories of Manufacturing Planning and Control as well as the techniques for this
- Have gained knowledge of the theories of Supply Chain Planning and Control as well as the techniques for this
- Have gained knowledge of the theories of Enterprise Resource Planning, Vendor Managed Inventory, Advanced Planning and Scheduling-Systems for manufacturing & supply chain planning and control and product configuration
- Have gained insight into plan hierarchy for manufacturing businesses and the related manufacturing planning and control activities, including:
    - Functionality, structure and setup of enterprise resource planning systems
    - Further functionality of advanced planning systems, vendor managed inventory etc.
    - Product configuration systems, requirements, functionalities and integration
    - Integration, improvement options, industrial examples.

Skills

- Be able to understand manufacturing and supply chain control in relation to a company's business processes
- Be able analyse an organisation's need for manufacturing and supply chain control with emphasis on the system as well as give suggestions to changes and improvements of parts of or the entire system
- Be able to understand how IT-systems can support manufacturing and supply chain business processes and work.

Competences

- Be able to identify the connection between manufacturing and supply chain systems and the company's other control systems as well as relations to suppliers and customers in the value chain
- Be capable of participating in manufacturing planning and control activities in manufacturing businesses independent of the manufacturing mode and approaches.

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**
Business Intelligence

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

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 Advanced Quality and Project Management Systems (5 ECTS)

Title: **Development of Quality and Project Management Systems II**
(Udvikling af kvalitets- og projektstyringssystemer (II))

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

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 or the like.

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.

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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 2011.

In accordance with the Framework Provisions and the Handbook on Quality Management for the Faculty of Engineering and Science 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 in which it is written, weight is also put on the student's spelling and formulation ability, in addition to the academic content. Orthographic and grammatical correctness as well as stylistic proficiency are considered 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 language performance alone; similarly, an examination cannot normally 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 Thesis must include an English summary.[3] If it is written in English, the summary must be in Danish.[4] The summary must be at least one page and maximum two 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 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 Faculty of Engineering and Science 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.

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 and exams.

[3] Or another foreign language (upon approval from the Board of Studies).
[4] The Board of Studies can grant exemption from this.

Completion of the Master Programme
The Master 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 is able to read academic texts in modern English and use reference works, etc., in other European languages.