Curriculum for the Master Programme in Manufacturing Technology

Studieordning for kandidatuddannelsen i virksomhedsteknologi

The Faculties of Engineering, Science and Medicine

Aalborg University
2010

Preface

Pursuant to Act 985 of October 21, 2009 on Universities (the University Act) with subsequent changes, the following curriculum for the Master programme in Manufacturing Technology is stipulated. The programme also follows the Framework Provisions and the Examination Policies and Procedures for the Faculties of Engineering, Science and Medicine.

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Chapter 1: Legal Basis of the Curriculum, etc.

1.1 Basis in Ministerial Orders
The Master programme in Manufacturing Technology 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. 857 of July 1, 2010 on University Examinations (the Examination Order) with subsequent changes. Further reference is made to Ministerial Order no. 181 of February 23, 2010 (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 programme falls under the Faculties of Engineering, Science and Medicine, Aalborg University.

1.3 Board of Studies Affiliation
The Master programme falls under the Board of Studies for Industry and Global Business Development under the School of Engineering and Science.

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

2.1 Admission
Admission to the Master programme in Manufacturing Technology requires a Bachelor degree in Mechanical Engineering and Manufacturing or the like.

Students with another Bachelor's 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 virksomhedsteknologi. The English designation is: Master of Science (MSc) in Engineering (Manufacturing Technology).

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 competencies 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, enabling the graduate to 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 an understanding of the basic elements and concepts involved in industrial manufacturing
- Has an understanding of how the elements interact locally as well as globally
- Has a deep understanding of the interface and structure of a limited manufacturing system
- Has attained an understanding for methods of analysing a manufacturing system
- Has attained an understanding of how to identify relevant actions as well as sketch and verify solutions
- Understands the fundamental principles of product design and development
- Has an understanding of the relationship between product design and manufacturing (design for manufacturing)
- Understands the use of modelling and simulation tools with regards to planning and implementing new manufacturing systems
- Understands the assumptions and limitations of the modelling and simulation tools used in the projects
- Is able to understand and use innovation models which speed up the innovation process, reduce the risk of failure and/or improve the business or societal value
- Has an in-depth knowledge of a selected manufacturing technology
- Is able to acquire new knowledge required to solve an industrial or scientific problem within manufacturing engineering and technology.

Skills

- Is able to identify and map causal relations between items such as the manufacturing equipment, the flexibility of the production facility, organisation, economy, the working environment, sustainability and the likes
- Is able to analyse technical issues with relation to manufacturing processes and production in a production facility
- Is able to formulate operational objectives for the performance of a production facility
- Is able to develop solutions for improving a production facility based on the analysis
- Is able to perform a sensitivity analysis of solutions in relation to the defined operational objectives
- Is able to develop a requirements specification for a manufacturing system through an analysis of customer needs
- Is able to develop solution concepts that satisfy the requirements specification
- Is able to identify critical elements of proposed solution concepts
- Is able to use appropriate modelling and simulation tools for development of solutions
- Is able to formulate a plan for the project's continuation. Is able to use innovation models in solution of an industrial problem
- Is able to perform an assessment of different options to solve a problem

- Is able to explain commercial relevance of a proposed solution
- Is able to assess limitations of the concepts, theories and methodologies applied in solution of a problem
- Is able to scout for new products, materials or manufacturing technologies
- Is able to demonstrate engineering and/or scientific skills within the line of specialisation and to perform engineering and/or scientific work.

Competencies

- Is able to analyse any given manufacturing system and prescribe measures to improve the efficiency of the facility
- Is able to interact and communicate with the participants involved in the design, development and operation of manufacturing systems
- Has the foundation to analyse and improve large scale manufacturing systems
- Is able to professionally participate in development of new products and manufacturing systems, focusing on evaluation, selection and implementation of relevant technologies
- Is able to establish the foundation for applying advanced and relevant simulation tools to future research and development activities
- Is able to participate in technological innovation activities
- Is able to work independently with a project on a specific problem within his/her field of interest at the highest possible level within his/her specialisation.

Chapter 3: Content and Organisation of the Programme

The MSc programme in Manufacturing Technology aims at providing graduates with competences to solve complex production-related problems and is designed to develop both theoretical understanding and practical experience. The programme focuses on design, development and implementation of products, manufacturing and control systems; primarily in relation to development, planning and implementation of industrial production.

The programme is structured giving the graduate the opportunity to specialise within specific areas; e.g. virtual product- and process development, material- and process technology and operation and robot technology. The specialisation is carried out through the project work.

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 aim 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; traditional 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 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 Manufacturing Technology.

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.		Production Analysis and Efficiency Improvement	15	7-point scale	Internal
		Process Modelling and Simulation	5	Passed/failed	Internal
		Production Modelling and Monitoring	5	Passed/failed	Internal
		Production Planning and Control	5	Passed/failed	Internal
2.		Development of Manufacturing Systems	15	7-point scale	External
		Intelligent Manufacturing	5	Passed/failed	Internal
		Engineering Optimisation – Concepts, Methods and Applications	5	Passed/failed	Internal
		Product Development and Modelling	5	Passed/failed	Internal
3.	A	Technological Innovation[1]	30	7-point scale[2]	Internal
	B	Scientific Paper[3]	30	7-point scale[4]	Internal
	C	Internship	30	7-point scale	Internal
4.		Master's Thesis	30	7-point scale	External

[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] Scientific paper writing 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.
[4] By agreement with the Study Board of Industry and Global Business Development, scientific paper writing may be reduced to allow for participation in course activities. However, the scientific paper 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.

3.3 Manufacturing Technology, 1st semester

3.2.1 Production Analysis and Efficiency Improvement (15 ECTS)

Title: **Production Analysis and Efficiency Improvement**
(Produktionsanalyse og effektivisering)

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

Goal: Students who complete the module are expected to:

Knowledge

- Have an understanding of the basic elements and concepts involved in industrial manufacturing
- Have an understanding of how the elements interact locally as well as globally
- Have a deep understanding of the interface and structure of a limited manufacturing system
- Have attained an understanding for methods of analysing a manufacturing system
- Have attained an understanding of how to identify relevant actions and sketch and verify solutions.

Skills

- Be able to identify and map causal relations between items such as the manufacturing equipment, the flexibility of the production facility, organisation, economy, the working environment, sustainability and the likes
- Be able to analyse technical issues with relation to manufacturing processes and production in a production facility
- Be able to formulate operational objectives for the performance of a production facility
- Be able to develop solutions for improving a production facility based on an analysis
- Be able to perform a sensitivity analysis of solutions in relation to the defined operational objectives.

Competencies

- Be able to analyse any given manufacturing system and to prescribe measures to improve the efficiency of the facility
- Be able to interact and communicate with the participants involved in the design, development and operation of manufacturing systems
- Have the foundation to analyse and improve large scale manufacturing systems.

Teaching Method: 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. The project will be carried out in close collaboration with an industrial company and will involve practical observations and analysis at the site of a specific production facility at the industrial company.

Form of examination: Internal, oral examination.

Evaluation criteria: As stated in the Framework Provisions.

3.2.2 Process Modelling and Simulation (5 ECTS)

Title: **Process Modelling and Simulation**
(Procesmodellering og -simulering)

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

Goal: Students who complete the module are expected to:

Knowledge

- Have an understanding of how careful modelling and a profound understanding of the numerical methodology can help an engineer in producing reliable and precise simulations for a wide variety of problems
- Have knowledge of element technology, such as bar, beam, solid and shell elements
- Be able to apply nonlinear finite element methods including solution of systems of nonlinear equations, geometrically nonlinear problems, contact problems and nonlinear material models
- Have an understanding of the non-linear nature of certain manufacturing processes
- Have an understanding of material modelling:
  - Plasticity and viscoelasticity
  - Non-linear properties of engineering materials such as steel and polymers
  - Methods to obtain material characteristics.

Skills

- Be able to solve engineering problems using a commercial finite element programme
- Demonstrate a basic understanding of concepts, theory and applications of finite element analysis from an engineering point of view
- As every simulation is a compromise between precisions and cost, the student must be able to judge the advantages and disadvantages of the different software options available
- Be able to model certain manufacturing processes using the finite element theory
- Be able to model a material based on test results
- Be able to conduct a systematic assessment of results.

Competencies

- Use finite element tools to model, simulate and interpret issues related to product and/or process design
- Be able to judge the opportunities and limitations of finite element simulations with regard to product and/or process design.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.2.3 Production Modelling and Monitoring (5 ECTS)

Title: **Production Modelling and Monitoring**
(Produktionsmodellering og -monitorering)

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

Goal: Students who complete the module are expected to:

Knowledge

- Have gained an understanding of methods and tools to analyse a production facility
- Have gained an understanding of discrete event simulation
- Have gained an understanding of the concepts, methods and tools of statistical quality control.

Skills

- Be able to use tools and methods to analyse a production facility
- Be able to analyse a company's production processes
- Be able to analyse the flow of products
- Be able to analyse the information flow
- Be able to use discrete event tools to simulate a production facility.

Competencies

- Have gained the insight and tools necessary to analyse and model either a complete or a part of production facility
- Have gained awareness and a holistic understanding of the systems and their interactions which are part of running a production facility.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.2.4 Production Planning and Control (5 ECTS)

Title: **Production Planning and Control**
(Planlægning og styring af produktion)

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

Goal: Students who complete the module are expected to:

Knowledge

- Have gained an in-depth understanding of:
  - Concepts, theories and methods regarding models for production planning and control applied to production setup as well as execution of production systems, especially fundamental models for economy, organisation and management
  - Technologies and systems which can support the development of such planning and control models.
- Have gained knowledge about the relationships between the knowledge elements.

Skills

- Be able to use of the theories and methods in design of specific planning and control systems
- Be able to use relevant technologies and systems in solving specific planning and control problems in practice
- Be able to evaluate theoretic and practical needs for planning and control and to select and substantiate economic optimal solutions
- Be able to communicate such problems and solution models to other participants in development projects.

Competences

- Be able to apply knowledge and skills in relation to complex development projects
- Be able to contribute constructively and professionally in multidisciplinary projects
- Be able to identify personal needs for additional learning and an appropriate approach.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.3 Manufacturing Technology, 2nd semester

3.3.1 Development of Manufacturing Systems (15 ECTS)

Title: **Development of Manufacturing Systems**
(Udvikling af produktionssystemer)

Prerequisites: 1st semester of the MSc in the Manufacturing Technology programme or the like.

Goal: Students who complete the module are expected to:

Knowledge

- Understand the fundamental principles of product design and development
- Have an understanding of the relationship between product design and manufacturing (design for manufacturing)
- Understand the use of modelling and simulation tools with regards to planning and implementing new manufacturing systems
- Understand the assumptions and limitations of the modelling and simulation tools used in a project.

Skills

- Be able to develop a requirements specification for a manufacturing system through an analysis of customer needs
- Be able to develop solution concepts that satisfy requirements specification
- Be able to identify critical elements of proposed solution concepts.
- Be able to use appropriate modelling and simulation tools for developing solutions
- Be able to formulate a plan for a project's continuation.

Competencies

- Be able to professionally participate in the development of new products and manufacturing systems, focusing on the evaluation, selection and implementation of relevant technologies
- Establish the foundation for applying advanced and relevant simulation tools for future research and development activities.

Teaching Method: 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.

Form of examination: Oral examination with participation of an external examiner.

Evaluation criteria: As stated in the Framework Provisions.

3.3.2 Intelligent Manufacturing (5 ECTS)

Title: **Intelligent Manufacturing**
(Intelligent produktion)

Prerequisites: 1st semester of the MSc in the Manufacturing Technology programme or the like.

Goal: Students who complete the module are expected to:

Knowledge

- Have gained an understanding of relevant technologies enabling the design of intelligent machines (artificial intelligence)
- Have gained an understanding of relevant sensor technologies including vision
- Have gained an understanding of highly flexible and integrated automation technologies
- Have gained an understanding of the business potential of intelligent manufacturing.

Skills

- Be able to use various technologies to provide manufacturing systems with intelligent capabilities (reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects)
- Be able to integrate and implement intelligent machines into a small and limited manufacturing system.

Competencies

- Have the foundation to participate in projects aiming at designing intelligent manufacturing systems which more or less autonomously can adapt to variations in their environment and, over time, improve their performance.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.3.3 Engineering Optimisation – Concepts, Methods and Applications (5 ECTS)

Title: **Engineering Optimisation – Concepts, Methods and Applications**
(Ingeniørmæssig optimering – begreber, metoder og anvendelser)

Prerequisites: 1st semester of the MSc in the Manufacturing Technology programme or the like.

Goal: Students who complete the module are expected to:

Knowledge

- Have gained an in-depth understanding of important concepts and methods of optimisation for efficient solution of optimisation problems within different areas of engineering, including design optimisation of mechanical systems.

Skills

- Have developed skills and expertise in proper formulation
- Have developed skills and expertise in the modelling of engineering optimisation problems as well as in selecting or developing appropriate techniques for numerical solutions to such problems.

Competencies

- Be able to apply the concepts, theories and methods for solution of engineering optimisation problems
- Be able to account for the considerations involved in the process of formulating and modelling an engineering optimisation problem, choosing an advantageous method of solution and implementing it in practice.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.3.4 Product Development and Modelling (5 ECTS)

Title: **Product Development and Modelling**
(Produktudvikling og -modellering)

Prerequisites: 1st semester of the MSc in the Manufacturing Technology programme or the like.

Goal: Students who complete the module are expected to:

Knowledge

- Have an understanding of the fundamental principles of product design and development
- Have an understanding of the relationship between product design and manufacturing (design for manufacturing)
- Have an understanding of product modelling and product configuration and its implications for manufacturing
- Have an understanding of how various IT tools can be used to support the design process.

Skills

- Be able to use basic system theory, methods, models and approaches, including the domain theory for design of manufacturing systems
- Be able to use product modelling in support of design and as a means of integration
- Be able to use various design for X methods
- Be able to use systematic methods for specification and development of product modules and platforms
- Be able use of different IT tools to represent product and production data
- Be able to use relevant IT tools to simulate the performance of the whole or part of a manufacturing system.

Competencies

- Have the ability to systematically develop new products, in particular new manufacturing systems
- Have improved the ability to interact with product designers, enabling design for manufacturing.

Teaching Method: The form(s) of teaching will be determined and described in connection with planning the semester. The description will account for the form(s) of teaching and may be accompanied by an elaboration of the participants' roles. The course/project theme is performed in either English or Danish dependent of the participants' language skills.

Form of examination: Internal, oral/written examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.4 Manufacturing Technology, 3rd semester

3.4.1 Technological Innovation (30 ECTS)

Title: **Technological Innovation**
(Teknologisk innovativ forretningsskabelse)

Prerequisites: 2nd semester of the MSc in Manufacturing Technology or the like.

Goal: Students who complete the module are expected to:

Knowledge

- Be able to understand and use innovation models which speed up the innovation process, reduce the risk of failure and/or improve the business or societal value
- Have an in-depth knowledge of a selected manufacturing technology.

Skills

- Be able to use innovation models in the solution of an industrial problem
- Be able to perform an assessment of different options to solve the problem
- Be able to explain the commercial relevance of the proposed solution
- Be able to assess the limitations of the concepts, theories and methodologies applied in the solution of the problem
- Be able to scout for new products, materials or manufacturing technologies.

Competencies

- Be able to participate in technological innovation activities.

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 must 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 on 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, chapter 9.4.1., and the study guide for the MSc programme in Manufacturing Technology.

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

- If the semester is carried out as an 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 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: Internal, oral examination (for further information, please see the programme's study guide).

Evaluation criteria: As stated in the Framework Provisions.

3.5 Manufacturing Technology, 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 MSc in Manufacturing Technology. 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

- Be able to acquire new knowledge required to solve an industrial or scientific problem within manufacturing engineering and technology.

Skills

- Be able to demonstrate engineering and/or scientific skills within the line of specialisation and to display their ability to perform engineering and/or scientific work.

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.

Teaching Method: The project is normally performed in small groups of two or three members or individually.

Form of examination: Oral examination with participation of an external examiner.

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 Faculties of Engineering, Science and Medicine and enters into force as of September 2010.

Students who wish to complete their studies under the previous curriculum from 2007 must conclude their education by the summer examination period 2011 at the latest, since examinations under the previous curriculum are not offered after this time.

In accordance with the Framework Provisions and the Handbook on Quality Management for the Faculties of Engineering, Science and 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 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's Thesis must include an English summary.[5] If it is written in English, the summary must be in Danish.[6] 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 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.

5.5 Additional Information

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

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

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 Danish, Norwegian, Swedish and English and use reference works, etc., in other European languages.