Curriculum for the Master's Programme in

Oil and Gas Technology

The Faculty of Engineering and Science
Aalborg University
2011

PREFACE:

Pursuant to Act 754 of June 17, 2010 on Universities (the University Act) with subsequent changes, the following curriculum for the Master's programme in Oil and Gas Technology is stipulated. The programme also follows the Framework Provisions and the Examination Policies and Procedures for the Faculty of Engineering and Science and The Faculty of Medicine.

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Chapter 1: Legal Basis of the Curriculum, etc.

1.1 Basis in ministerial orders
The Master's programme in Oil and Gas Technology is organised in accordance with the Ministry of Science, Technology and Innovation's Ministerial Order no. 814 of June 29, 2010 on Bachelor's and Master's 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. 233 of March 24, 2011 (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 Biotechnology, Chemical and Environmental Engineering.

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

2.1 Admission

Admission to the Master's programme in Oil and Gas Technology requires a Bachelor's degree in Chemistry and Biotechnology, Chemical Engineering, Environmental Engineering, or the like.

Students with another Bachelor's degree, upon application to the Board of Studies, will 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.

2.2 Degree designation in Danish and English

The Master's programme in Oil and Gas Technology entitles the graduate to the designation civilingeniør, cand.polyt. (candidatus/candidata polytechnices) i olie- og gasteknologi. The English designation is: Master of Science (MSc) in Engineering (Oil and gas Technology).

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 graduate of the Master's programme has competencies acquired through an educational programme that has taken place in a research environment.
>
> The graduate of the Master's 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 Ph.D. programme). Compared to the Bachelor's degree, the graduate of the Master's 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 in Oil and Gas Technology

The graduate of the Master's programme in Oil and Gas Technology:

Knowledge	• has knowledge that is based on the highest international research in one or more subject areas within oil and gas technology:
	  ○ Reservoir engineering
	  ○ Enhanced oil recovery
	  ○ Oil and gas production
	  ○ Separation processing
	• can understand and, on a scientific basis, reflect over the above mentioned knowledge and identify scientific problems

Skills	• masters the scientific methods, the tools and general skills related to employment within the oil and gas industry • can evaluate and select among scientific theories, methods, tools and general engineering skills and, on a scientific basis, advance new analyses and solutions • can communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists
Competencies	• can manage work and development situations that are complex, unpredictable and require new solutions. • can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility. • can independently take responsibility for own professional development and specialisation

Chapter 3: Content and Organisation 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. Examinations are 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

3.1 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	Assessment	Exam	Exam form
1st	Oil and Gas Separation *(Olie og gas separation)*		15	7-point scale	Internal	Oral based on project
	Fluid Mechanics *(Strømningslære)*		5	7-point scale	Internal	Oral or written
	Colloid and Interface Science *(Kolloid og grænsefladekemi)*		5	7-point scale	Internal	Oral
	Thermodynamics, Separation and Instrumentation *(Termodynamik, separation og instrumentering)*		5	Pass/Fail	Internal	Written
2nd	Oil and Gas Production *(Olie og gas produktion)*		15	7-point scale	External	Oral based on project
	Process Simulation *(Processimulering)*		5	Pass/Fail	Internal	Oral based on mini project
	Water Treatment *(Teknisk vandbehandling)*		5	7-point scale	Internal	Oral
	Petroleum Geology and Reservoir Engineering *(Oliegeologi og reservoir teknologi*		5	7-point scale	Internal	Written
3rd	Elec-tives	Enhanced Oil Recovery *(Forøget olieudvinding)*	30	7-point scale	Internal	Oral based on project
		Evaluation of Petrophysical Parameters of Oil Reservoirs (Vurdering af petrofysiske parametre i oliereservoirer)				
		Production, Separation and Piping of Oil and Gas *(Produktion, separation og rørføring af olie og gas)*				
		External Studies* *(Udlandsophold)*				
		Long Master's Thesis *(Langt afgangsprojekt)*				
4th	Master's Thesis *(Kandidatspeciale)*		30	7-point scale	External	Oral based on project
Total			120			

* Plans for external studies must be approved by the study board in advance.

3.2 Descriptions of 1st semester modules

3.2.1 Oil and Gas Separation

English title Danish	**Oil and Gas Separation** (Olie og gas separation)
Placement	1st semester Oil and Gas Technology
ECTS	15
Prerequisites	Thermodynamics, Separation and Instrumentation must be followed
Objectives	**Students who complete the module:** Knowledge • Must have knowledge of general process engineering • Must understand and be able to describe relevant processes in the oil and gas industry • Must understand and be able to describe the physical and chemical principles for the processes Skills • Can read and make flow diagrams, PVT and PI diagrams • Can apply or develop a mathematical model of the material flows and energy transformations in a process • Can understand, apply and prepare relevant technical documentation Competencies • Must be able to design a separation train for oil and gas 3 phase crude oil stream including export pipelines for produced gas and oil
Content	• Calculation of phase envelope from oil and gas composition • Calculation of physical properties of petroleum fluids • Mass balance equations • Dimensioning of separators (horizontal and vertical), flowlines, heat exchangers, pumps, compressors, hydrocyclones, scrubbers, control valves, frequency convertors • Control and Instrumentation: transmitters, actuators, type of controllers, SCADA system, split-range control and cascade control. • Safety: Instrumentation for safety, Alarm High and Alarm Low, ESD safety system, Stand Alone safety principle – typical PSV valves. • Environmental aspects regarding oil and gas production
Type of instruction	Project work base don given data
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.2.2 Fluid Mechanics

English title Danish	**Fluid Mechanics** Strømningslære

Placement	1st semester Chemical Engineering 1st semester Oil and Gas Technology
ECTS	5
Prerequisites	Fundamental Chemical Engineering and Thermodynamics at B.Sc. 2nd semester Fundamental Fluid Mechanics and Heat Transfer at B.Sc. 5th semester
Objectives	**Students who complete the module must:** Knowledge • Have comprehension of the fundamental basis for the formulation and analysis of the statics and dynamics of the flow of viscous fluids • Have knowledge about fluid kinematics • Have knowledge about stresses in fluids, equation of motion, constitutive models and Navier-Stokes equations • Have knowledge and understanding of Reynolds averaging and turbulence models • Be able to describe turbulent and laminar boundary layers including understanding of momentum equation for boundary layers • Have knowledge and comprehension of the basic phenomena involved in multiphase flows. • Have knowledge to plan and design and make experiments and to choose measurements methods suitable to the characteristics of the fluid. Skills • Be able to determine and apply appropriate experimental methods to fluid flows • Be able to apply appropriate analytical, semi-empirical and numerical methods for mathematical description of fluid dynamic problems • Be able to apply multiphase flow models Competencies • Independently be able to define and analyse scientific problems within the area of fluid dynamics. • Independently be able to be a part of professional and interdisciplinary development work within the area of fluid dynamics
Content	
Type of instruction	The course is taught by a mixture of lectures, workshops, exercises, mini-projects and self-studies.
Exam format	Written or oral examination
Evaluation criteria	Are stated in the Framework Provisions

3.2.3 Colloid and Interface Science

English title Danish	**Colloid and Interface Science** (Kolloid og grænsefladekemi)
Placement:	1st semester Chemical Engineering 1st semester Oil and Gas Technology

ECTS	5
Prerequisites	
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about different disciplines in which the theory of colloid and interface science are beneficial for understanding details of products or processes • Must be able to understand the importance of size and interparticle forces that result in macroscopic properties of substances. Skills • Must be able to apply general theory of colloid science in combination with experimental tools • Must be able to evaluate which kinds of experimental tools that preferable can be used to enhance the physico-chemical understanding of a given process or product. Competencies • Must have competences to be able detailed to explain models of colloids and interfaces that can be used for the description and understanding of different colloid systems. This involves physical equations, diagrams, drawings and images.
Content	Description of different types of colloids. Charges in colloidal systems and their measurements. Stability of colloidal systems. Intercolloidal surface forces. Surfactants. Adsorption at interfaces. Microemulsions and emulsions. Wetting. Scattering techniques. Electron Microscopy. Laboratory problems in the colloid laboratory.
Type of instruction	Lectures, laboratory problems and theoretical exercises
Exam format	Oral examination
Evaluation criteria	Are stated in the Framework Provisions

3.2.4 Thermodynamics, Separation and Instrumentation

English title Danish	**Thermodynamics, Separation and Instrumentation** (Termodynamik, separation og instrumentering)
Placement	1st semester Oil and Gas Technology
ECTS	5
Prerequisites	
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about laws of thermodynamics • Must have knowledge about phase rule and thermodynamic

	properties of fluids • Must have knowledge about equations of state • Must have knowledge about sub- and supercritical state • Must have knowledge about separation techniques and heat exchangers • Must have knowledge about pumps and compressors for pressure regulation • Must have knowledge about control and instrumentation of an oil-gas separation system • Must have knowledge about environmental control for the oil and gas production. Skills • Must be able to apply numerical methods to calculate the properties of ideal and real substances, and mixtures • Must be able to understand and apply PVT diagrams • Must be able to evaluate equilibrium conditions, boundaries of phase transitions and regions of VLE, LLE, VLLE • Must be able to use thermodynamic charts and tables to evaluate PVT properties • Must be able to select and dimension a separation train for oil/gas/water separation applying the thermodynamic theory • Must be able to design a separation train • Must be able to design a control system for the safety control of separation systems in the oil and gas industry • Must be able to apply the knowledge in designing a piping system for oil and gas export system Competencies • Must be able to find thermodynamic properties of fluids applying equations of state and traditional charts and tables • Must be able to understand, formulate and solve the tasks of thermodynamic problems • Must be able to design export and piping systems for oil and gas. • Must be able to instrument a complete oil and gas separation train
Content	Equilibrium conditions Phase rule Laws of Thermodynamics PVT diagrams EOS VLE, LLE, VLLE, SLE Rule of mixing Miscible and immiscible mixtures • different type and calculation of separation units for crude oil • additional equipment for each separation unit such as heat exchangers, control valves, pipes, compressors, pumps • design of an export pumping station • calculation of an export piping line for gas • calculation of an export piping line for oil
Type of instruction	Lectures, practical exercises, group and individual instructions
Exam format	Written examination
Evaluation criteria	Are stated in the Framework Provisions

3.3 Descriptions of 2nd semester modules

3.3.1 Oil and Gas Production

English title Danish	**Oil and Gas Production** (Olie og gas production)
Placement	2nd semester Oil and Gas Technology
ECTS	15
Prerequisites	Petroleum Geology and Reservoir Engineering must be followed
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about a production plant from reservoir to refinery • Must have knowledge about multiphase flows in oil reservoirs • Must have knowledge on saturated and undersaturated oil fields, and oil formation volume factor • Must have knowledge about computer based simulation system (f.ex. Hysys) for calculation of the separation train • Must have knowledge about material selection for units in the oil and gas separation plant • Must have knowledge about risk of corrosion in the oil and gas separation plant • Must have knowledge about the environmental laws for oil and gas production • Must have knowledge about gas treatment systems • Must have knowledge about export piping system • Must have knowledge about safety systems in the oil and gas production systems Skills • Must be able to calculate volumes of produced oil and injected water • Must be able to do the calculations for saturated and undersaturated oilfields • Must be able to use a computer based simulation system (f.ex. Hysys) for calculating a the separation of oil/gas/water and for exporting oil and gas onshore • Must show knowledge about the risk of corrosion of the used materials and show knowledge about for the safety and environmental risk of corrosion • Must be able to select materials for units in the separation and export systems • Must be able to design an export system for gas from the offshore separation train to onshore gas treatment station and for oil from the offshore separation train to onshore refinery using a computer based simulation system Competences • Must have competences to be able to present the setup of the model, the calculations and estimations of the results and to propose further work based on the results of calculation.

	• Must have competences to select materials for a separation system using the knowledge about corrosion.
Content	Project work based on given production data from the oil industry
Type of instruction	Project work. Individual and group consultancy, exercises
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.3.2 Process Simulation

English title Danish	**Process Simulation** (Processimulering)
Placement	2nd semester Chemical Engineering 2nd semester Oil and Gas Technology
ECTS	5
Prerequisites	Working knowledge of thermodynamics and unit operations
Objectives	**Students who complete the module:** Knowledge • Must be able to understand the principles of process simulation. • Must have knowledge about optimization in process simulation. • Must have knowledge about software programmes for advanced simulations Skills • Must be able to convert a process diagram to a working process simulation. • Must be able to perform both static and dynamic simulations if applicable in the given simulation software. • Must be able to apply one or more programmes in a simulation of a selected process in a specified scale. • Must be able to evaluate the results of the simulations as well as identifying and correcting the cause of erroneous results. Competencies • Must be able to create a process simulation of a given process and add controls to this simulation if applicable in the given simulation software. • Must be able to investigate a given case using simulation tools. • Must be able to present the results of the simulations and propose a further course of action. • Must be able to apply existing methods or software on computational chemistry to specific chemical questions.
Content	• Introduction to process simulation • Creating processes in simulation software • Using built-in evaluation tools • Static and dynamic simulation (if applicable in given software)

	• Students make a mini project using advanced software to model or simulate a chemical process or structure
Type of instruction	Lectures with exercises, mini-project.
Exam format	Oral examination based on mini-project
Evaluation criteria	Are stated in the Framework Provisions

3.3.3 Water Treatment

English title Danish	**Water Treatment** (Teknisk vandbehandling)
Placement	2nd semester Chemical Engineering 2nd semester Oil and Gas Technology
ECTS	5
Prerequisites	
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about different water bodies in the society and its surroundings. • Must have knowledge on produced water, its properties and treatment in the off shore industry • Must have knowledge of different kinds of natural and antropogenic pollutants and their origin. • Must have knowledge about which chemical compounds are normally present in groundwater and at which levels. Skills • Must be able to describe a normal Danish drinking water treatment system. • Must be able to understand and select a methodology from an array of advanced oxidative and reductive processes that separately or in common can solve a given recalcitrant water pollution problem. Alternatively, estimate which kind of normal water treatment methods from drinking water treatment plants or municipal waste water treatment plants will be able to solve the problem. • Must be able to suggest and apply techniques for reuse and treatment of produced water in the off shore industry • Must have ideas to solve problems with lakes and streams on their way to become eutrophic. Competencies • Must be able to apply proper terminology in oral, written and graphical communication and documentation within water treatment technology.
Content	Drinking water systems. Waste water systems. Produced water in the off shore industry Groundwater systems. Lakes and streams. Pollutants and remediation technologies. Cases.

Type of instruction	Lectures supplemented with project work, workshops, presentation seminars, lab tests. Cases
Exam format	Individual oral examination
Evaluation criteria	Are stated in the Framework Provisions

3.3.4 Petroleum Geology and Reservoir Engineering

English title Danish	**Petroleum Geology and Reservoir Engineering** (Oliegeologi og reservoir teknologi)
Placement:	2nd semester Oil and Gas Technology
ECTS	5
Prerequisites	
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about principals of geochronology, stratigraphy, geodynamic processes and distribution of mineral resources • Must have knowledge about structure and properties of oil fields, reservoir rocks and fluids • Must be able to understand the mechanisms and stages of exploration, drilling, production and development • Must have knowledge about methods of enhanced oil recovery • Must have knowledge about well testing • Must have knowledge about multiphase flow and frontal displacement in oil reservoir Skills • Must be able to make vertical and horizontal models of the oil and gas field • Must be able to evaluate reserves of oil depositions based on area-depth method • Must be able to determine physical properties of rocks by simple methods and using log analysis • Must be able to calculate volume of water injection based on material balance Competencies • Must be able to determine and evaluate oil and gas reserves using geophysical data
Content	Mapping Geological sections Calculations of Gross Reservoir Volume based on Area-Depth method Evaluations of reserves Laboratory determinations of porosity and density of rocks Interactive Petrophysics software course
Type of	Lectures, instructions, workshop

instruction	
Exam format	Written examination
Evaluation criteria	Are stated in the Framework Provisions

3.4 Descriptions of 3rd semester modules

3.4.1 Enhanced Oil Recovery

English title Danish	**Enhanced Oil Recovery** (Forøget olieudvinding)
Placement:	3rd semester Oil and Gas Technology
ECTS	30
Prerequisites	Thermodynamics, Separation and Instrumentation Petroleum Geology and Reservoir Engineering
Objectives	**Students who complete the module:** Knowledge • Must have knowledge and comprehension about different third generation methods of enhanced oil recovery (EOR) • Must be able to understand and describe the methodology based on physico-chemical terms and coherences. Skills • Must be able to perform experiments in the laboratory using relevant equipment • Must be able to obtain results that can either improve the understanding of the process or optimize it • Must be able to evaluate the results of the investigations and to describe a way of up-scaling the process Competencies • Must have competences to present the area and the results of own investigations in a logic manner.
Content:	Project work
Type of instruction:	Discussions and ad hoc study circles. Instruction in laboratory
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.4.2 Evaluation of Petrophysical Parameters of Oil Reservoirs

English title Danish	**Evaluation of Petrophysical Parameters of Oil Reservoirs** (Vurdering af petrofysiske parametre i oliereservoirer)
Placement	3rd semester Oil and Gas Technology

ECTS	30
Prerequisites	Petroleum Geology and Reservoir Engineering
Objectives	**Students who complete the module:** Knowledge • Must have knowledge and comprehension about petrophysics Must have knowledge about logging tools and logging method interpretation (GM, SP, NGM, NNM, IL, LL, GGL, ML) • Must have knowledge about correlation and facial analysis Skills • Must be able to use Interactive Petrophysics software • Must be able to make qualitative and quantitative evaluation of the type of saturation within the reservoir (oil, gas and water) • Must be able to calculate porosity, permeability and saturation using various logging methods • Must be able to make zonation and correlation of the layers Competencies • Must be able to determine petroleum reservoirs using logging curves and make evaluation of their main properties •
Content	Research program including study and experimental work
Type of instruction	Project work
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.4.3 Production, Separation and Piping of Oil and Gas

English title Danish	**Production, Separation and Piping of Oil and Gas** (Produktion, separation og rørføring af olie og gas)
Placement:	3rd semester Oil and Gas Technology
ECTS	30
Prerequisites	Knowledge about oil and gas production similar to 1st and 2nd semester oil and gas technology
Objectives	**Students who complete the module:** Knowledge • Must have knowledge about application of simulation software for a given system or part of a system • Must have fundamental knowledge about process design Skills • Must be able to choose and combine experimental and theoretical methods for solving complex problems in oil and gas technology

	• Must be able to estimate and maybe apply numerical modelling of the system. • Must be able to critically review the methods used and results gained during the project work. Competencies • Must be able to work independently on a project concerning production, separation and piping of oil and gas • Must be able to independently identify key aspects of the problem/process and apply the appropriate theory to this problem/process. • Must be able to evaluate the progress of the project and include any needed literature or data to maintain a scientific basis. • Must be able to utilize advanced scientific methods to solve problems. • Must be able to communicate the results of the project work in a project report.
Content	Project work
Type of instruction	Project work
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.5 Descriptions of 4th semester

3.5.1 Master's Thesis

English title Danish	**Master's Thesis** Kandidatspeciale
Placement	4th semester Oil and Gas Technology
ECTS	30
Prerequisites	1st - 3rd semester completed
Objectives	**Students who complete the module:** Knowledge • Must have knowledge and comprehension within the field of the specialization at the highest international level • Must be able to critically evaluate knowledge and identify new scientific problems within the field of the specialization • Must understand implications within the related research area including research ethics Skills • Independently explain choice of scientific theoretical and/or experimental methods • During the project and when finalising it make an independent and critical estimation of the chosen theories and methods as well as the

	analyses, results and conclusions • Be able to apply a wide range of engineering methods in research and development in the field of specialization • Be able to communicate relevant scientific and professional aspects of project work in a clear and systematic way both to specialists and the public Competencies • Be able to work independently with a project on a specific problem within the fields of the specialization at the highest international level • Independently be able to define and analyse scientific problems and based on that make and state the reasons for the decisions made • Be competent to solve new and complicated technical problems by the use of advanced mathematics, scientific and technological knowledge • Be able to evaluate the progress of the project independently and select and include additional literature, experiments or data when needed in order to maintain a scientific basis for the project • Be able to control complex and unexpected working situations and be able to develop new solutions • Must be able to communicate the results of the project work in a project report
Content	The project work can be part of an ongoing research at the university or done in cooperation with an external partner. The theme of the project can be within the same area as the theme of the 3rd semester project, or it can be a new one. The supervisor and the project coordinator must approve the project proposal.
Type of instruction	Project work with supervision, supplemented with instructions, workshops, presentation seminars, lab tests.
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are stated in the Framework Provisions

3.5.2 Long Master's Thesis

English title Danish	**Master's Thesis** kandidatspeciale
Placement	3rd and 4th semester Oil and Gas Technology
ECTS	60
Prerequisites	1st - 2rd semester completed A project proposal with a considerable amount of experimental scientific work can be chosen as a long Master's Thesis if the supervisor and project coordinator approve
Objectives	**Students who complete the module:** Knowledge • Must have knowledge and comprehension within the field of the

	specialization at the highest international level • Must be able to critically evaluate knowledge and identify new scientific problems within the field of the specialization • Must understand implications within the related research area including research ethics Skills • Independently explain choice of scientific theoretical and/or experimental methods • During the project and when finalising it make an independent and critical estimation of the chosen theories and methods as well as the analyses, results and conclusions • Be able to apply a wide range of engineering methods in research and development in the field of specialization • Be able to communicate relevant scientific and professional aspects of project work in a clear and systematic way both to specialists and the public Competencies • Be able to work independently with a project on a specific problem within the fields of the specialization at the highest international level • Independently be able to define and analyse scientific problems and based on that make and state the reasons for the decisions made • Be competent to solve new and complicated technical problems by the use of advanced mathematics, scientific and technological knowledge • Be able to evaluate the progress of the project independently and select and include additional literature, experiments or data when needed in order to maintain a scientific basis for the project • Be able to control complex and unexpected working situations and be able to develop new solutions • Must be able to communicate the results of the project work in a project report
Content	The project work should be part of an ongoing research project at the university
Type of instruction	Project work with supervision, supplemented with instructions, workshops, presentation seminars, lab tests.
Exam format	Oral examination based on a written report and the project closing
Evaluation criteria	Are 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

Students who wish to complete their studies under the previous curriculum from 2008 must conclude their education by the summer examination period 2012 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 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 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.[1] If the project is written in English, the summary must be in Danish.[2] 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 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 Completion of the Master's programme

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

5.6 Rules and requirements for the reading of texts

It is assumed that the student can read academic texts in his or her native language as well as in English and use reference works etc. in other European languages.

5.7 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.

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