



# Curriculum for the Master's Programme in Global Innovation Management

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**Preface**

Pursuant to Act 261 of March 18, 2015 on Universities (the University Act) with subsequent changes, the following curriculum for the Master programme in Global Innovation Management is stipulated. The programme also follows the Joint Programme Regulations and the Examination Policies and Procedures for the Faculty of Engineering and Science.

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## **Chapter 1: Legal Basis of the Curriculum, etc.**

### **1.1 Basis in Ministerial Orders**

The Master's programme in Global Innovation Management is organised in accordance with the Ministry of Higher Education and Science's Order no. 1328 of November 15, 2016 on Bachelor's and Master's Programs at Universities (the Ministerial Order of the Study Programs) and Ministerial Order no. 1062 of June 30, 2016 on University Examinations (the Examination Order) with subsequent changes. Further reference is made to Ministerial Order no. 258 of March 18, 2015 (the Admission Order) and Ministerial Order no. 114 from February 3, 2015 (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 of Industry and Global Business Development under the School of Engineering and Science.

### **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

#### Applicants without legal claim to admission

Admission to the Master programme in Global Innovation Management requires:

- A Bachelor's degree or equivalent, at second-class level or higher, in an engineering, science or technology subject
- An appropriate level of competence in the English language, through attaining IELTS 6.5 or TOEFL 232/95

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

The Master programme entitles the graduate to the designation Master of Science (MSc) in Engineering (Global Innovation Management) (joint degree).

### 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 of the Programme

#### The graduate of the Master programme:

#### Knowledge

- Has knowledge in the following subject areas that, in selected areas, is based on the highest international research in a subject area
  - Enterprise Engineering and Design
  - Operations Development and Strategy
  - Innovation and Change Management
  - Global Performance Management
  - Business Intelligence
  - Global Implementation.
- Can understand and, on a scientific basis, reflect over the subject area's(s') knowledge and identify scientific problems.

#### Skills

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

#### Competencies

- Can manage work and development in complex and unpredictable situations requiring new solutions

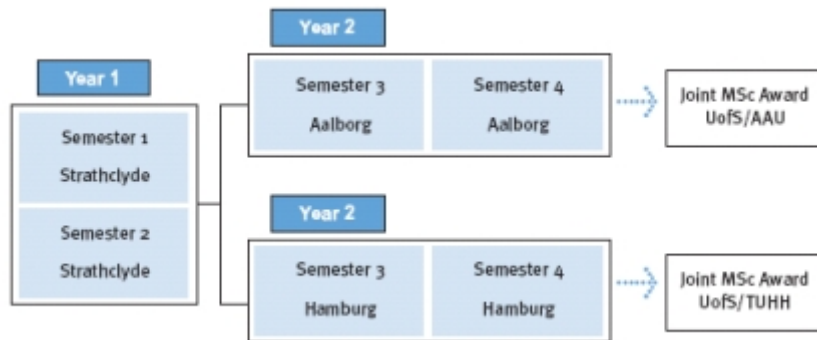
- Can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- Can independently take responsibility for own professional development and specialisation

### Chapter 3: Content and Organisation of the Programme

The Master of Science in Global Innovation Management (GIM) is a unique 2-year programme offered jointly by the Department of Design Manufacture and Engineering Management (DMEM) at the University of Strathclyde (Scotland), The centre of Industrial Production at Aalborg University (Denmark) and The Institute of Technology and Innovation Management at Hamburg University of Technology (Germany), which enables graduates of first degrees in engineering, science and technology to successfully manage the innovation process across international boundaries.

Students study at two European Universities with the programme’s delivery over two years providing a greater depth of learning, more industrial engagement and a rich cultural experience.

The programme is fulltime over 24 months and divided into 4 semesters of study.



All students take a common first year at the University of Strathclyde, then select to deepen study at Hamburg or apply skills and knowledge in an industrial internship at Aalborg, followed by finalizing their Master theses. The programme is delivered in English and intended for excellent graduates of first degrees in Engineering, Science and Technology. The MSc award is made jointly by the University of Strathclyde and the second year institution.

The 3<sup>rd</sup> semester at Aalborg University is allocated to gaining practical international experience. The semester will enable students to appreciate theoretical reflective work practice and cultural challenges. The aim of the semester is to

1. Gain practical experience within the subject field
2. Analyse and reflect on educational experiences and professional practice
3. Clarify the Master’s Thesis topic.

The 3<sup>rd</sup> semester project is carried out in collaboration with a global company while the student is working there. The purpose of this semester is to design and execute an individual project study within the topics of the programme. This will enable student to demonstrate proficiency in innovation and integration processes as well as management and implementation of technological and organisational change projects.

During the 4<sup>th</sup> semester at Aalborg University, the Master’s Thesis is completed. The Master’s Thesis may be combined with the 3<sup>rd</sup> semester in an extended Master’s Thesis.

### 3.1 Program Overview

Semester		Module		ECT S	Grading	Exam
1.-2. (Strathclyde)	Compulsory courses	Product Development project 2	<a href="#">56502 Product Development Project 2 2012-2013</a>	10		
		Design Management	<a href="#">EF927 Design Management 2012-2013</a>	6		
		Global Design	<a href="#">DM503 Global Design 2012-2013</a>	5		
		Management of Innovation	<a href="#">DM981 Management of Innovation 2012-2013</a>	5		
		Strategic Technology Management	<a href="#">DM920 Strategic Technology Management 2012-2013</a>	6		
		Supply Chain Operations	<a href="#">DM926 Supply Chain Operations 2012-2013</a>	6		
	Optional courses	Design for Manufacture and Assembly	<a href="#">56405 Design for Manufacture and Assembly 10</a>	5		
		Design Methods	<a href="#">DM934 Design Methods 2012-2013</a>	6		
		People Organisation & Technology	<a href="#">DM918 People Organisation and Technology 2012-2013</a>	6		
		Management of Tot. Quality & Continuous Improvement	<a href="#">DM935 Management of Total Quality and Continuous Improvement 2012-2013</a>	6		
		Product Design and Techniques	<a href="#">DM924 Product Design Techniques 2012-2013</a>	6		
		Design Project 1	<a href="#">56412 Design Project 1 (MEng) 11</a>	10		
		Manufacturing Systems Design and Management	<a href="#">56419 Manufacturing Systems Design and Management 10</a>	5		
		Enterprise Resource Planning	<a href="#">DM928 Enterprise Resource Planning 2012-2013</a>	6		
		Strategic Supply Chain Management	<a href="#">DM927 Strategic Supply Chain Management 2012-2013</a>	6		
		Product Costing and Financial Management	<a href="#">DM944 Product Costing and Financial Management 2012-2013</a>	6		
		Engineering Risk Management	<a href="#">DM933 Engineering Risk Management 12-13</a>	6		
Professional Practice	<a href="#">56408 Professional Practice 11</a>	5				



		Sustainable Product Design Techniques	<a href="#">DM943 Sustainable Product Design and Manufacturing 12-13</a>	5		
		Systems Thinking and Modelling	<a href="#">DM945 Systems Thinking and Modelling 2012-2013</a>	5		
		Product Modeling and Visualization	DM 923 Product Modeling & Visualisation	5		
		Design Form and Aesthetics	DM 983 Design Form and Aesthetics	5		
		Human Centred Design	DM 984 Human Centred Design	5		
		Advanced Materials and Production Technology	DM 948 Advanced Materials and Production Technology	5		
3. (Aalborg)		Innovation Pilots		25	7-point scale	Internal
		Operations Development and Strategy		5	7-point scale	Internal
4. (Aalborg)		Master's Thesis		30	7-point scale	External

## 3.2 Global Innovation Management, 3<sup>rd</sup> semester

### 3.2.0 Problem Based Learning and Project Management Problembaseret læring og projektledelse

#### Objective

The objective is to make newly started Master students coming from institutions other than AAU prepared to enter the problem based learning environment at AAU and manage study projects in close collaboration with peers.

#### Type of instruction

Three half day workshops centered around the individual student working with an individual challenge or curiosity in relation to using a PBL approach. Peer learning is also a hallmark, since the students will discuss and reflect their individual challenges/curiosities in a peer learning group.

#### Learning outcomes

After completion of the course the student should be able to

#### Day 1:

- describe and discuss the Aalborg PBL model based on the three key words: group work, project work, problem orientation
- identify an initial individual challenge when using a PBL approach

#### Day2:

- develop and practice peer feedback skills
- practice collaborative learning in a group
- design a plan of action to deal with an initial individual PBL challenge or curiosity

#### Day 3:

- practice presentation skills
- practice critical skills when giving feedback to peers
- reflect on own and peer skills in relation to PBL practice

#### Exam format

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

#### Evaluation criteria

The criteria for the evaluation are specified in the Joint Programme Regulations

### 3.2.1 Global Innovation Management – Industrial Application

#### **Title: Innovation Pilots / Innovationspilot**

**Goal:** Students who complete the module are expected to:

#### *Knowledge*

- Have gained knowledge and understanding of theoretical reflective work

- Have gained insight into intercultural communication and its implications.

### *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 to 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:** The semester consists of an industrial internship in a relevant Danish company. The total work load of the semester must be equivalent to 30 ECTS. The project should be finalised with a project report or in the form of a scientific paper.

**Teaching Method:** 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;

**Form of examination:** Oral examination based on a written report (for further information, please see the programme's study guide).

**Evaluation criteria:** As stated in the Joint Programme Regulations.

### 3.2.2 Operations Development and Strategy (5 ECTS)

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

**Goal:** Upon completion of the module, the student can:

#### *Knowledge*

- Understand configuration and design of operations systems in the manufacturing and service environments and demonstrate an in-depth knowledge of related theories and practices
- Describe and explain operations system performance objectives (cost, quality, flexibility, speed and dependability) and their change over time.
- Account for various perspectives on performance of operations systems (including focus, trade-off and synergies perspectives)
- Describe and explain structural and infrastructural decisions of operations systems design, including process technology, technology development and transformative effects of technology on operations systems
- Understand and demonstrate the importance of alignment between performance objectives and operations systems design through operations strategy matrix tool

#### *Skills*

- Use and evaluate appropriate methodologies and approaches to operations system conception, design, implementation and operation (CDIO)
- Analyze and evaluate different choices for strategic design of global operations systems and operations development strategies
- Initiate operations systems improvement and re-organizations processes and their implementation in the context of contemporary global operations

#### *Competencies*

- Diagnose problems in operations systems designs both in the manufacturing and service environments
- Conceive and design operations systems and their continuous development
- Take responsibility for the implementation and control of operations systems development

**Teaching method:** see chapter 3 **Form of examination:** Oral/written examination (for further information, please see the programme's study guide).

**Evaluation criteria:** Are stated in the Joint Programme Regulations.

### 3.3 Global Innovation Management, 4<sup>th</sup> semester

#### 3.3.1 Master's Thesis (30 ECTS)

**Title:** Master's Thesis / Kandidatspeciale

The master thesis can be conducted as a long master thesis. If choosing to do a long master thesis, it has to include experimental work and has to be approved by the study board. The amount of experimental work must reflect the allotted ECTS.

**Prerequisites:** Successful conclusion of the first three semesters of the MSc in Global Innovation Management.

**Goal:** Students who complete the module are expected to:

##### *Knowledge*

- Have attained thorough understanding of the specialisation's subject areas.

##### *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 within the fields of the specialisation.

##### *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.

**Teaching Method:** Project work

**Form of examination:** Oral examination with participation of an external examiner appointed by the Danish Ministry.

**Evaluation criteria:** As stated in the Joint Programme Regulations.

## **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 2017 for 1<sup>st</sup> and 3<sup>rd</sup> semester.

Students who wish to complete their studies under the previous curriculum from 2016 must conclude their education by the summer examination period 2018 at the latest, since examinations under the previous curriculum are not offered after this time.

## **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 may 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.<sup>1</sup> 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'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

### **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.

### **5.4 Exemption**

Due to the collaborate nature of this curriculum, exemptions are made from the normal rule for external/internal exams, and graded versus passed/non-passed exams.

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.

Credit transfer at this programme is not possible.

### **5.5 Rules and Requirements concerning the Reading of Texts**

It is assumed that the student is able to read academic texts in modern English and use reference works, etc. in English

### **5.6 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.

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<sup>1</sup> Or another foreign language (upon approval from the Board of Studies).