

Chapter 9
The programme specific part of the curriculum

Bachelor of Engineering in Global Management and Manufacturing (GMM)

Curriculum 2016, Version 1.2

Applicable to students admitted September 2016 onwards

The Curriculum is divided into general provisions (Chapters 1-8), a programme-specific section (Chapter 9), and descriptions of the programme's individual course modules. Students should familiarise themselves with all three parts in order to get a complete overview of the provisions regulating the programme.

§1 Job profile

Who is a GMM engineer?

A Bachelor of Engineering in Global Management and Manufacturing will be one of the company's key employees in relation to international production and cooperation. The GMM engineer will often work globally within business management, production and services in close cooperation with both customers and suppliers around the world. A GMM engineer will typically be involved in the design and optimisation of global supply chains.

The jobs will primarily be in the private sector for goods and services, but also employment in public organisations with international collaboration is within the frame.

Typical job content:

International business development

Define business projects and implementation plans for global business development in close relation to optimising the total value and supply chain.

Process and operations management

Improvements in production, logistics and Supply Chain. Design and root-cause process analysis to evaluate the possibilities for continuous improvement. Project management and stakeholder analysis, supporting the implementation of optimised processes.

Supply chain system implementation and development

Process and workflow optimisation within the Supply Chain and the company. Manage ERP-system integration and perform restructuring and support throughout the organisation.

Production and logistics management

Handle inbound and outbound logistics, manage shop floor operators, optimise production, be a change agent, motivate employees, organise international SOP's.

Key account managers

Management of relationships with vital customers in business to business environments.

Expats

Expatriation from a parent company to subsidiaries, for engineering, management and business tasks.

Consultant / manager of international Supply Chain networks

Align the supply chain with the company strategy and establish the needed control systems for continued improvement of the operational units. Establish and design the system for flow of goods from raw materials to end user. Optimise the value chain to maximise efficiency and reduce costs.

Distribution and transport management.

Management of a part of the supply chain from manufacturing/warehouse to customers in the most cost efficient and less time consuming way.

In/Outsourcing and sourcing management

Strategic and operational purchasing, procurement and assessment of suppliers.

Engineers/managers in virtual networks

Product or business development in a global context either in customer relations or internally.

Manufacturing strategies and systems

Develop concepts for manufacturing systems in a globalised networks. Evaluate the level of automation according to the level of qualification and cost of labour. Establish operations in a multicultural context.

International organisational corporation

Manage international corporation in relation to company acquisition, corporate social responsibility, legal disputes and issues, organisational changes.

§2 Competence profile

Knowledge:

1. Global view of business development in markets of supply and demand.
2. The process of acquiring companies.
3. Knowledge about Product to the Market considering; positioning, segmentation, marketing parameters and customer awareness in different cultures.
4. In-depth knowledge about the strategic Global Supply Chain Networks, their elements, how they are interconnected and the context in which they operate.
5. Detailed knowledge about establishing, organizing and managing manufacturing processes and assets.
6. Knowledge about international company aspects within CSR, Regulatory compliance, leadership and multicultural cooperation, as well as change management.
7. Thorough knowledge about regulatory international trading aspects in legislation, conventions, bilateral agreements, regions conditions, governmental influences etc.
8. In-depth knowledge of Supply Chain and Operations Management, warehouse management, procurement, sourcing, distribution and ERP-systems in a global, inter-group and local context.
9. Profound knowledge about the company's internal and external accounting, financing and control systems.
10. Broad knowledge about economical evaluation of countries' macro-economic situation in investment and establishing aspects.
11. Broad knowledge of different labour market systems.
12. Project management in cross cultural environments.
13. Knowledge about the operational use of the company's ERP system, as well as how it can support the decision making process.
14. Knowledge about quality management and quality improvement methods.

Skills:

1. Ability to assess, calculate and propose operational investment possibilities in different markets and countries.
2. Ability to manage and carry out supply chain improvement projects.
3. Ability to communicate in business English and make use of acquired knowledge within international topics.
4. Ability to plan "Product to Market" activities. Including Product Portfolio management and PLC assessments.
5. Ability to plan and accomplish changes in companies including the organisation in relation to up- or down scaling of the manufacturing facilities in respect to technological processes, atomisation, cost level and risk related conditions.
6. Ability to identify, obtain and process data and information for analysing and improv-

ing business systems.

7. Ability to identify, assess and improve quality issues as well as implement quality assurance and management systems.

Competences:

1. Capability to navigate, negotiate and being respected on all levels in an international organisation
2. Optimise and design the Value Chain for supplying the product/service to customers to create the optimal profit and conditions for the company. Including allocation of the individual elements of the value chain to strategic locations for a total optimization of the flow of materials and information.
3. Ability to handle expatriation, including culture differences, respectfully protecting themselves and others against culture clashes in the management of subordinates.
4. Manage projects in international companies at different organisational levels based on a holistic approach and firm economical insight.
5. Manage the Individual elements of the value chain covering; Organization, Plan, Source, Make, Deliver, Return and Enable processes.

§3 Subject columns

The subject columns

The GMM engineer's qualifications obtained during the education are based on six subject columns. The column elements are linked together during the semesters in semester themes with a semester project and lectures in theory and concepts.

The subject columns are:

- Supply Chain Management
- International qualifications
- Materials, Processes and Quality
- Financial and Managerial Accounting
- Basic Applied skills
- Personal and learning skills

The subject column: Supply Chain Management

The purpose of this subject column is to provide students with an in-depth knowledge of the Supply Chain and its individual elements. The knowledge covers the strategic, tactical and operational level, for students to be able to develop, (re)-design and connect the elements to form efficient global value chains. Evaluation and choice of product, supplier, manufacturing system, location, flow and distribution strategies to form cost effective and customer satisfying networks is of great importance in this subject column.

The skillset will focus on analytical techniques, models and tools that address a wide range of supply chain management issues.

The subject column includes the following elements:

Understand, analyse and improve Supply Chain Networks

- Inventory Management & Planning
- Materials management, Manufacturing & Capacity planning
- Order management flows and ERP systems
- Data capture, Performance management
- Supplier Relationship Management (SRM), Procurement, Purchasing procedures and planning & control of inbound logistics
- Production systems, Manufacturing strategies, SI&OP and Forecasting
- International network optimisation, Location decisions, Logistics & Distribution channel design
- Cradle-to-Cradle & Product Life Cycle management and Reverse logistics
- Supply Chain Risk management

- Predominant frameworks, concepts and philosophies for optimisation.

The subject column: International qualifications

The purpose of the subject column is to provide students with an in-depth knowledge and overview of international business and CRM, allowing the students to interact and communicate in world-wide cultural and business environments. Furthermore, it provides students with the ability to assess and exploit business solutions on a global scale.

The subject column includes the following elements:

- Customer Relationship Management (CRM)
 - International strategic issues
 - International marketing and competitiveness
 - Market entry strategy and -modes
 - Internationalisation
- Cultural understanding
 - Political, legal and technological environments
 - The international socio-cultural environment
 - Leadership & Change Management
 - Configuration of international teams and organisations
 - International Business Law, International jurisdiction and enforcement
 - Due Diligence activities by acquisitions
- International logistics
 - Modes of Transport
 - Understanding transport agreements and documentation.

The subject column: Materials and Processes

The purpose of the subject column is to provide students with a fundamental understanding of industrial materials and manufacturing processes. Providing students with insight into master data, quality management and failure prevention as well as specifications needed to support international manufacturing.

The subject column includes the following elements:

- Specifications
 - Material and manufacturing documentation
 - Drawings, tolerances and geometries
 - Master data definition & application
- Materials
 - Material structures

- Material selection
- Mechanical properties of materials, Material test methods
- Material shaping, forming, casting, moulding & joining processes

- Quality
 - Quality planning and control
 - Cost of quality, Failure prevention and recovery
 - Predominant frameworks, concepts and philosophies for Quality Management

- Processes
 - Capacity calculation and detailed manufacturing layouts
 - Time & Work study techniques
 - Warehouse, assembly and packaging techniques.

The subject column: Financial and Managerial Accounting

The purpose of the subject column is to provide students with knowledge of managerial and financial accounting and with an understanding of internal and external reporting & controlling. Students will gain knowledge of analysing the financial information as well as other types of information, which are intended primarily to assist managers in meeting the goals of the organisation.

Furthermore, the subject column enables students to use external reporting to provide information to shareholders and other stakeholders. As well as to evaluate a company's past economic score-cards to support decision-making, often directed by authoritative guidelines that may differ across countries.

The subject column includes the following elements:

- Management Accounting:
 - Costing systems, Traditional cost allocation and Activity Based Costing
 - Cost-volume-profit relationships and income effects of alternative stock-costing methods
 - Relevant information for decision making; pricing, transfer pricing, target costing, customer profitability analysis and measuring variances and quantity effects
 - Capital investment decisions
 - Control systems, performance measurement and sensitivity analysis

- Financial Accounting
 - Measuring and reporting financial position and performance. Reporting additional measures of performance (financial KPI's)
 - Measuring and reporting on P/L, Balance sheets and Cash flows for analysing and interpreting financial statements.

The subject column: Basic Applied Science

The subject column Basic Applied Science covers a range of general competences which are basic knowledge or tools to be used in the field of a GMM Engineer. This area includes Project Planning, Theory of Science, Statistics, and IT-skills, among others.

The subject column includes the following elements:

- Project Management
 - Covering the different aspects of project management being able to plan, structure and manage a project using the right tools in order to reach the project objectives
 - Understanding the dynamics and different roles in teamwork in order to manage a project organization
- Theory of Science
 - Analysing, recognising and applying scientific methods and approaches when working as engineers
- Statistics
 - Understanding basic statistical concepts
 - Applying statistics for analysis of quality and operations data & processes
 - Using statistics to analyse markets of supply and demand
- IT-skills
 - Practical application of spread-sheets to support decision-making
 - Capture and analyse data (e.g. ERP data) using spread-sheet functionality.

The subject column: Personal and Learning Qualifications

In general the programme provides students with personal qualifications as described in the DSMI model.

In particular GMM-students will also:

- Improve their proficiency in English oral and written communication
- Develop an ability to perform and cooperate in cross-cultural working environments
- Develop a self-awareness of own cultural values and profile
- Develop a talent to present business cases and proposed solutions.

§4 Semester Themes

Semester	Semester Theme
7	Final Project
6	Internship
5	Specialisation / International semester
4	Improving the Performance of Global Supply Chains
3	Executing Manufacturing Strategy
2	Planning and Managing Company Processes
1	Global Supply Chains

§5 Structure and Modules

Semester	Courses																													
7	GX-PRO7 Final Project																													
6	GX-IPK Industrial Engineering Training																													
5 (a) or	Study abroad at a partner university ¹																													
5 (b)	Electives																		F-EIT5 Experts in Team Innovation											
4	GX-IBL International Business Law					GX-MAA2 Managerial Accounting 2					GX-SCM4 Supply Chain Management 4					GX-SET4 Semester theme: Improving the Performance of Global Supply Chains Business Improvement, Theory of Science, Semester Project 4														
3	GX-BAS3 Basic Applied Science 3 Quality Management, Managerial Accounting 1										GX-SET3 Semester theme 3 Executing Manufacturing Strategy Supply Chain Management 3, Semester Project 3															X-GIQ3 International Qualifications 3				
2	GX-BAS2 Basic Applied Science 2 Materials and processes 2, ERP and Excel										GX-SET2 Semester theme: Planning and Managing Company Processes Supply Chain Management 2, International Qualifications 2, Semester Project 2																			
1	GX-BAS1 Basic Applied Science 1 Materials and Processes 1, Statistics										GX-SET1 Semester theme: Global Supply Chains Supply Chain Management 1, International Qualifications 1, Semester Project 1																			
ECTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

1) Students are encouraged to complete the 5th semester at a foreign university. Please note that the courses must be approved by the Academic Study Board of the Faculty of Engineering.

Furthermore, the programme includes workshop training (6 ECTS) for students who lack basic practical skills related to the BEng programme.

Colour codes	Compulsory courses	Elective courses	Study abroad
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§6 Description of 1st semester

SEMESTER THEME

Global Supply Chains

VALUE ARGUMENTATION

The overall objective of the semester is to give the students a holistic understanding of supply chain management and supply chain elements. The students will learn how to manage projects and understand team structures and cooperation. Furthermore various international environments are introduced as well as markets of supply & demand. A set of basic engineering skills, covering Materials & Processes and Statistics, will support the semester theme.

COMPETENCE GOALS

The students will:

- have a broad view of international business and globalisation processes, through the understanding of the political, economic and cultural business environment
- have basic knowledge of multicultural aspects in business
- understand the global market and different entry strategies
- understand the fundamentals of the internalisation process
- have a fundamental understanding of organisational structures
- be able to structure, plan a project and understand how to organise teamwork and work as an efficient team member in multicultural teams
- be able to read and understand technical drawings
- understand fundamental properties of engineering materials and the principles of manufacturing processes
- have a fundamental understanding of statistics used in business applications
- be able to use intermediate features of spreadsheets
- be able to identify the main elements of a supply chain and how they interact.

SEMESTER STRUCTURE

GX-SET1 – Global Supply Chains (20 ECTS)

- International Qualifications 1
- Supply Chain Management 1
- Semester Project 1

GX-BAS1 – Basic Applied Science 1 (10 ECTS)

- Statistics
- Material and Processes 1

Both modules are compulsory and together with GX-SET2 – Planning and Managing Company Processes (20 ECTS) on 2nd semester they constitute the first year examination. The first year examination must be passed before starting the 3rd semester.

CONTEXT

Students entering the GMM programme will all be qualified at an intermediate level in Math, Physics and English, but might have quite different educational and cultural backgrounds. In order to provide the students with a good foundation for entering the programme, the following are integrated in the 1st semester:

- To align the level of the students varying competences using spread sheets for calculation and data analysis, a beginner/intermediate course is integrated within the statistics course
- One day of teambuilding activities giving insight into team roles, behaviour and conflicts
- A careful introduction to the programme/semester with a focus on structure, courses, teamwork and exams. Also the e-learning system will be introduced
- Extra focus in supervision of groups in order to make sure students get familiar to working in groups and handle conflicts
- The semester is structured from the idea that it presents and touches important elements of the programme in general, aiming to give students a better understanding of the study programme and what kind of career paths it will lead towards.

Company visits and guest lecturing from students at later semesters or graduated GMM students are integrated during the semester. This is done in order to increase the understanding of the GMM identity as early as possible and pass on proper study technique

§7 Description of 2nd semester

SEMESTER THEME

Planning and Managing Company Processes

VALUE ARGUMENTATION

The overall objective of the semester is to give the students a deeper knowledge and understanding of the processes and systems in the Supply Chain. The students will learn how to design manufacturing operations as well as how to execute manufacturing planning. Warehouse handling and how to control different inventories located in the supply chain will be covered as well. Finally students will be able to perform a systematic evaluation when choosing and planning supply and transportation through basic knowledge of sourcing, procurement and external logistics.

COMPETENCE GOALS

The student will be able to:

- understand the structure of ERP-systems and how it supports business operations
- operate and carry out simple workflows in ERP-systems
- extract data from ERP-systems using Spread-sheet functionality to structure and analyze data
- design effective work stations for manufacturing and packaging
- determine time standards and calculate (production) capacity
- design layouts for manufacturing and assembly
- read and understand linear and geometric tolerances as well as common standards
- understand, create and work with master data for planning purposes
- understand inventory fundamentals and be able to see inventory in its overall context and interactions with company activities and the overall supply chain objectives
- use different methods of forecasting
- apply a fundamental understanding of procurement, sourcing, and management of suppliers
- know the basics within negotiation and supplier audit
- perform planning and calculation of transportation within the supply chain
- understand the importance of basic planning data and their connection to the planning of technology, logistics and economy.

SEMESTER STRUCTURE

GX-SET2 – Planning and Managing Company Processes (20 ECTS)

- International Qualifications 2
- Supply Chain Management 2
- Semester Project 2

GX-BAS2 – Basic Applied Science 2 (10 ECTS)

- ERP and Excel
- Material and Processes 2

Both modules are compulsory.

Furthermore, GX-SET2 – Planning and Managing Company Processes is part of the first year examination. Together with the modules GX-SET1 – Global Supply Chains and GX-BAS1- Basic Applied Science 1, it has to be passed in order to continue on the 3rd semester of the GMM programme.

CONTEXT

Where the previous semester applies a holistic view on the fields of GMM, this semester aims to dig deeper into different operations, processes and systems within the Supply Chain. Most of the subjects related to this semester have been introduced on the 1st semester. In this way, students have experienced how subjects interconnect, before going to a deeper level of understanding.

In relation to the admission requirements and different educational background of the students, the second semester carry on aligning and supporting the teamwork skills, proper study techniques and understanding of the GMM-engineer identity. This is done e.g. by integrating:

- Extra focus in GX-SET2, supporting the teamwork by providing personal supervision and defining each student's specific team profile incl. strength and weaknesses.
- Contribution towards the understanding of the programme identity and study technique based on meetings with students on higher semesters or graduated students.

§8 Description of 3rd semester

SEMESTER THEME

Executing Manufacturing Strategy

VALUE ARGUMENTATION

The semester will move to the strategic manufacturing level, addressing different production systems and how to formulate a competitive manufacturing strategy, based on competitors, customers and the current company state. To support both strategy, performance and risk management students will get a firm knowledge of Managerial Accounting to support decision-making in a company.

In order to support the capabilities and continuous improvements of the company, the semester will cover Quality Management at both the operational and strategic level, also supporting aspects when sourcing internationally.

In relation to international strategic considerations students will get acquainted with establishing or acquiring multi-cultural companies focusing at Due Diligence, Corporate Social Responsibility and Change Management.

COMPETENCE GOALS

The student will:

- Understand how high-level strategic decisions will lead to a range of lower operational decisions
- Understand how to focus the factory using, or moving towards, the appropriate manufacturing systems
- Be able to formulate and plan the implementation of a Manufacturing Strategy
- Be acquainted with Global strategies and how to implement organizational change in multi-cultural corporations
- Understand the process when acquiring companies also considering Corporate Social Responsibility
- Be able to evaluate the effect of different strategic and operational decisions in depth, using the principles of international managerial accounting
- Be able to use managerial accounting in relation to the cost perspective, decision-making and capital investments, control systems and sensitivity analysis
- Understand in-depth the principles of Quality management and make use of quality tools to improve process and product performance throughout the supply chain
- Know how to set up systems to measure and control the quality as well as manufacturing performance.

SEMESTER STRUCTURE

GX-SET3 – Executing Manufacturing Strategy (15 ECTS)

- Supply Chain Management 3
- Semester Project 3

X-GIQ3 – International Qualifications 3 (5 ECTS)

GX-BAS3 – Basic Applied Science 3 (10 ECTS)

- Quality Management
- Managerial Accounting 1

All the modules are compulsory.

CONTEXT

Based at both a holistic and detailed level of understanding the Supply Chain, the 3rd. semester adds the level of managing and controlling the operations in global companies. With the holistic and detailed understanding of Supply Chain elements, processes and systems from the previous two semesters, the focus will move towards the more strategic and economical aspects in leadership, as well as securing and improving quality. In order to support designing and implementing global strategies, this semester adds the international perspective in establishing and acquiring international companies considering organizational changes, cultural implications as well as CSR.

§9 Description of 4th semester

SEMESTER THEME

Improving the Performance of Global Supply Chains

VALUE ARGUMENTATION

The overall objective of the semester is to strengthen the students understanding of global strategies and international manufacturing, allowing them to analyse and improve existing manufacturing processes and supply chains. They will be supported doing this, by being provided with knowledge of predominant improvement concepts and frameworks; e.g. Lean and SCOR, as well as financial management and international Business law.

For the purpose of using scientific methods in projects, the student will gain knowledge about science theory.

In order to apply the theory and have a practical approach towards the improvement of existing manufacturing systems and supply chains, the students will be working on a real case project provided by a company. The collaboration with companies also serves the purpose of preparing the student for the internship and final project.

COMPETENCE GOALS

After the semester the student will:

- Have a framework for analysing manufacturing strategy and the performance of the supply chain.
- Be able to identify and analyse complex problems in relation to manufacturing and supply chain management
- Develop practical solutions & concepts using prevalent improvement programs such as the Lean Concept, the SCOR Model, Six Sigma and others
- Know how to structure project work, formulate business cases & implementations plans, as well as issue the relevant reporting systems. Be able to manage improvement projects
- Be able to cooperate and communicate at different levels in a company using gained knowledge and gathered data
- Be able to investigate, calculate best locations and establish a network of manufacturing sites, domestic and international, including establishment of basic distribution systems
- Be able to select and organize a manufacturing facility according to one out of several manufacturing philosophies
- Understand how Sales & Operations Planning can be used to create a profitable balance between sales and manufacturing output
- Be able to understand, measure and report financial position and performance. Reporting

additional measures of performance (financial KPI's)

- Be able to understand, measure and report on P/L, Balance sheets and Cash flows for analysing and interpreting financial statements
- Manage constraints, life-cycle costing and supply chain management
- Possess knowledge of harmonization and international accounting standards and provide relevant information to shareholders, creditors and other stakeholders
- Know how to describe the legal disputes likely to arise in international transactions and identify the legal issues dealt with in cross-border trade as well as carry out basic office-level legal risk management
- Get a fundamental knowledge of the history of modern science and its development, as well as be able to discern the most central positions, terms and models within science. Get the ability to distinguish between science and pseudo-science, as well as the knowledge of what it takes to make this distinction.

SEMESTER STRUCTURE

GX-SET4 – Improving the Performance of Global Supply Chains (15 ECTS)

- International Qualifications 4
- Semester Project 4

GX-IBL – International Business Law (5 ECTS)

GX-MAA2 – Managerial Accounting 2 (5 ECTS)

GX-SCM4 – Supply Chain Management 4 (5 ECTS)

The four modules are compulsory.

CONTEXT

This semester build on both the managerial economical and international focus from the previous semester, with focal points in financial accounting and International Business Law. The firm knowledge of global supply chains allows the students to start concentrating on optimising existing business and supply chains, which is the main objective of the semester. The optimisation will be based on real companies' issues through the project work. Working with real company projects prepares the students for the internship on the 6th semester and the final bachelor project on the 7th semester.

§10 Description of 5th semester

SEMESTER THEME

Semester theme: Specialisation/International semester

The students can choose between studying at a foreign university on courses pre-approved by the academic study board or continue their studies at the University of Southern Denmark as described below.

VALUE ARGUMENTATION

The students should develop an understanding of working together with students from other programmes and cultures, at foreign universities or in the project Experts in Team Innovation. Particularly if going abroad, the students develop personal, international and cultural competences, which is an important part of the GMM programme.

The semester strengthens the student's possibility to form their own profile as they will have the opportunity to choose elective courses of special interest and related to the GMM profile.

COMPETENCE GOALS

The students will after the semester be able to:

- participate in an interdisciplinary cross cultural group, being able to handle and solve conflicts
- use Project Management tools in connection with interdisciplinary projects
- acquaint themselves with other academic disciplines at a foreign university or in an interdisciplinary group, and apply the knowledge in the joint project work
- reflect on own experiences with interdisciplinary and multi-cultural collaboration
- understand how the particular GMM academic knowledge and skills can provide value and be adapted into an interdisciplinary project
- recognise the gained knowledge of special interest within the GMM academic field.

SEMESTER STRUCTURE

Elective courses equivalent to 30 ECTS at a foreign university or

F-EIT5 – Experts in Team Innovation (10 ECTS)

Electives courses equivalent to 20 ECTS

The module F-EIT5 is compulsory if studying at the University of Southern Denmark

CONTEXT

After concluding the first four semesters, students have acquired the essential academic knowledge of the GMM programme and will be ready to add related knowledge of own interest, in order to specialise and prepare for further studies after graduation. In particular, the semester will focus in personal development both at an interdisciplinary and a cross-cultural level. Working and engaging in an international setup with people of other cultures is a core element of the programme.

§11 Description of 6th semester

SEMESTER THEME

Internship

The 6th semester is constituted by the Internship. The Internship emphasises the practical and professional dimensions of the bachelor of engineering study programme and as such constitutes a central part of the programme. The practical execution of the internship is described in the Faculty Internship Concept, available on the faculty website.

VALUE ARGUMENTATION

During the internship, the students solve daily tasks and projects in a real business environment, making practical use of the competencies acquired in the programme so far. During their studies and through project work and company visits students have become familiar with practical solutions. Particularly the company project on the 4th semester and the personal development on the 5th semester contribute to preparing the students for the more practical approach in the company. The 6th semester will specifically contribute to the student's ability to navigate and understand a company organisation and is a prerequisite for being able to apply practical oriented solutions in the final project of the 7th semester.

COMPETENCE GOALS

To expand the student's understanding of business in general develop the student's creativity, independence and interpersonal skills as well as developing the student's competencies in the following areas:

- Communication with companies when looking for a job
- Experience in transforming the core theories of the study programme into practical, feasible projects
- Experience in acquiring knowledge during the completion of projects
- Understanding the organizational, economic, social and occupational conditions of a company
- Gaining insight into the social and administrative environments, including the communication and cooperation between co-workers at different levels as well as administrative procedures
- Experience in presenting results, orally and in writing, to groups of recipients with different occupation, education and background.

SEMESTER STRUCTURE

GX-IPK – Industrial Engineering Training (30 ECTS)

The module is compulsory.

CONTEXT

The internship will serve as the most important link between the theoretical studies and the ability to apply the theory in real company situations. At the time of the internship, students have concluded most of the theory and have achieved a high level of the knowledge needed in the companies. Through the practical oriented project work and company contacts, students have been prepared to enter a company. On the 7th semester, students complete their final project in collaboration with a company and the internship will prepare them for interacting with the company.

§12 Description of the 7th semester

SEMESTER THEME

Final Project

VALUE ARGUMENTATION

During the 7th semester, the student writes the final project. The project is written in cooperation with a company and gives the student an opportunity to demonstrate and further develop competences needed to analyse and devise solutions to a complex practical problem associated with the central subjects of the programme. Through the final project students are able to combine the knowledge and skills gained during the study, solving larger complex engineering issues including several elements within the academic field of a GMM engineer. In this way, students will develop the professional competences needed in their future job.

COMPETENCE GOALS

By working on the final project, the students expand their knowledge in the principles and theories of the engineering profession and strengthen their skills in professional and creative problem solving in relation to complex engineering problems. Through writing a final project, the student's competencies in professionally managing a complex project is enhanced, including the ability to:

- organise the analytical process in relation to a complex problem
- phrase and define a problem
- plan time and resources
- assess and prioritise a set of problem solving strategies
- evaluate a set of alternative solutions in relation to a given complex problem
- evaluate the economic consequences of a proposed solution
- consider international aspects in business solutions
- unite theory and practice in solving a specific problem
- communicate the knowledge and results achieved
- be critical and reflective regarding the work process as well as the solution.

SEMESTER STRUCTURE

GX-PRO7 – Final Project (30 ECTS)

The module is compulsory.

CONTEXT

The final project concludes the studies; gathering a majority of the academic knowledge, skills and internship experience gained through the programme into one combined practical task, solving a real project in collaboration with (and working in) a company. In this way, students develop the necessary skills and competences required in their future engineering job.

§13 Entry into Force and Amendments

1. Approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 18th November 2009.
2. Curriculum 2014 approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 10 April 2014.
3. Amendments approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 27 January 2015.
4. Curriculum 2015 approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 18 March 2015.
5. Amendments approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 17 March 2016.
6. Curriculum 2016 approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 18 April 2017.
7. Amendments approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 23 October 2017 (Version 1.1).
8. Amendments approved by the Academic Study Board of the Faculty of Engineering and the Director of Studies on behalf of the Dean of the Faculty of Engineering 17 April 2018 (Version 1.2).

Article 14 Transitional Curriculum Arrangements

This curriculum is effective from 1 September 2017. Earlier curricula will be phased out and the affected courses will be taught and examined for the last time concurrently with the phasing out of the curriculum. For details please refer to the individual course descriptions.

Students enrolled on earlier curricula will continue on their current curriculum and will not be affected by these changes unless they are behind in their studies and have yet to pass courses that are no longer offered or for some other reason apply for change of curriculum.

Students enrolled on earlier curricula who do not follow the prescribed course of study will not be offered special teaching. Thus, students who have yet to pass courses that are no longer offered must replace those courses with courses from the new curriculum. This is only possible by written application to the Academic Study Board of the Faculty of Engineering and the application must be enclosed a study plan made in consultation with the programme administrator. Alternatively, students can apply to the study board for change of curriculum.

Leave of absence and re-enrolment

In cases of re-enrolment the faculty will decide whether the student is enrolled on this curriculum or will continue on his/her original curriculum. At the end of a leave of absence the student will be enrolled on his/her original curriculum unless the student applies for a change of curriculum.

Credit transfer table

When students change curriculum, courses passed will be credit transferred to compulsory courses in the new curriculum according to the below table. There will be no transfer of or changes in the number of ECTS credits. This also applies when the credits on an earlier curriculum differs from the credits on the courses to which it is credit transferred. Only courses completed and passed in their entirety can be transferred.

Previous curricula	Curriculum 2017
2009-2015: GX-SET3-U3 (20 ECTS)	GX-SET3-U4 (15 ECTS) + X-GIQI3-U3 (5 ECTS)
2009-2015: GX-SET4- U2 (20 ECTS)	GX-SET4-U2 (15 ECTS) + GX-SCM4-U1 (5 ECTS)