Curriculum
Programme section

Bachelor of Global Business Engineering

Applicable to students enrolled in August 2021 and later.

Contents

Introduction

In accordance with the Executive Order on Bachelor of Engineering, the purpose of Bachelor of Engineering is to qualify the students to carry out the following professional functions nationally and Internalationally:

- Transpose technical research results as well as scientific and technical knowledge to practical use in development tasks and in solving technical problems
- Critically acquire new knowledge within relevant engineering areas
- Independently solve common engineering tasks
- Plan, implement and manage technical and technological facilities, including being able to involve social, economic, environmental and occupational health consequences in the solution of technical problems
- Participate in collaborative and managerial functions and contexts at a qualified level with people who have different educational, linguistic and cultural backgrounds

In addition, the education must qualify students to participate in further studies.

VIA Engineering programmes work on the basis of a common graduate profile. The graduate profile is a common profile for all VIA Engineers. The graduate profile is to be combined with the identity of the specific engineering programme.

At VIA Engineering, we are practice-oriented, project-oriented and world-focused. This is put into practice in the form of qualified new graduates obtained through targeted teaching, relevant research and development, as well as collaboration and ongoing dialogue with the business community. The programmes must qualify graduates to handle practical and development-oriented business functions.

Programmes in English as well as admission of Internalational students are hallmarks of our engineering programmes. This profile creates a unique opportunity to educate students who can act in a Danish context in an increasingly global market. Our lecturers have vast and solid practical experience and know how to anchor theory in practice through lab work, company visits and projects for and in collaboration with companies.

1 Identity of the programme

VIA Global Business Engineering (GBE) focuses on applied science and technology in a unique combination with economics and marketing, as well as languages and culture. The hallmark of the programme is the Internalational focus and the inter-disciplinary skills, which will make the GBE graduate attractive to a wide range of companies.

GBE graduates are qualified to:

- Operate primarily in the industrial market, especially within the fields of mechanical engineering and software engineering.
- Fulfil managerial positions within design and implementation of technical solutions, as well as within marketing and sales in Denmark and abroad.
- Obtain positions, e.g. as project managers, export managers, product managers or marketing coordinators.
- Work independently as well as in teams with members from different educational and cultural backgrounds.
- Optionally continue their studies to achieve a master's degree.

The objectives of the programme are achieved primarily through:

- Interaction between theory and practice with focus on **business**, **engineering**, and **culture**. Through the **project work**, emphasis is also on developing the student's professional, methodological, communicative and personal skills.
- Providing an Internalational study environment, with all courses offered and taught in English for Danish and Internalational students, with the possibility to carry out parts of the programme abroad
- Active utilisation of the student's **Internalship** as a mean to exchange knowledge and experience between the university college and the industry.

2 Graduate profile for VIA Engineers

Purpose
The newly graduated VIA engineer works problem-oriented, project- and team-based and contributes to advising, developing, inventing and quality-assuring products and solutions. The VIA engineer creates innovative, digital, sustainable and workable solutions to and for current and future societal and engineering challenges worldwide.

Skills
VIA Engineering educate holistic-thinking engineers who, through societal insight and personal development, can exploit the full potential of technology. Therefore, the skills of the VIA engineer range from highly specialised engineering skills to personal skills and the skills of the outside world.

Professional engineering skills
- Masters and applies – with critical reflection – highly specialised engineering knowledge.
- Works challenge-driven, innovative and problem-oriented when developing engineering results.
- Integrates engineering and scientific knowledge, skills and methods in solving engineering challenges.
- Designs, plans, simulates, manages, implements and evaluates engineering solutions and products using digital and technological tools.
- Implements and operates solutions that match engineering needs within the industry.

Organisational skills

- Organises and manages projects and processes based on both risk assessment and market and business understanding.
- Collaborates inter-professionally with a global view and respect for the organisation, culture and methods of businesses and stakeholders.
- Involves knowledge of sustainability and circular economy in the development and implementation of new solutions.

Personal skills

- Works consistently with a curious and innovative mindset and seeks out, critically acquires and brings new knowledge into play throughout life.
- Communicates effectively and collaborates professionally with colleagues and people of different educational and cultural backgrounds.

3   Teaching and working methods

The engineering programme's priority focus areas within Digitalisation, Sustainability and Innovation and Entrepreneurship are integrated into relevant courses, so that together they constitute learning streams for all three areas.

Active and practice-oriented learning is supported by:
- Dialogue-based teaching with a high degree of active participation from students.
- Lectures in subjects where there is a large proportion of knowledge transfer. Lectures are usually combined with practice sessions with a student tutor.
- Project work and problem-oriented learning (PBL) are an essential part of the teaching, as the academic elements of the education programme are integrated into application-oriented engineering projects with emphasis on methodological problem solving.
- Projects being carried out in groups within the programme and in an interdisciplinary collaboration with other engineering programmes.
- Collaborating with research environments and businesses in connection with the implementation of the teaching.
- Offering an International study environment, where parts of the study can be completed abroad and where several courses are held in English for Danish and foreign students alike.
- The student's engineering Internship being actively used to bring about the exchange of knowledge and experiences between VIA and the profession.

Application- and practice-oriented skills are primarily achieved by utilising VIA's facilities within laboratories, manufacturing workshops and library.

Teaching can be physical, online or located at another campus. There may also be projects that are done together between two locations, ie. here the project work will then be online. In addition, there may be subjects where you partially participate online / transmitted with the offer in either Horsens or Aarhus.

4   Structure and content

The programme is organised as a full-time higher education. Science and technology make up for minimum 50 percent of the study programme. Business and Communication courses make up maximum the remaining 50 percent of the programme. Teaching is structured around class tutorials, assignments, lab exercises and workshop practice. Classes are small in order to allow group discussions and provide more individualised attention. Focus is on active student-centered learning to develop your critical thinking and interpersonal skills. Theory taught in classroom sessions is applied in problem-based projects. This prepares the student for the challenges after graduation.

After completing the 2nd semester, the GBE students must choose either a software engineering specialisation or a mechanical engineering specialisation. The programme structure and progression will be as indicated in the two tables for GBE-Software Engineering and GBE-Mechanical Engineering, respectively on the next page.

The official duration of the degree program is 4½ years, divided into 9 semesters of 30 ECTS, corresponding to 270 ECTS points in total.

The scope of each course or project is documented in the form of ECTS points (European Credit Transfer System). 1 ECTS point corresponds to a workload of 27.5 hours for a student, an academic year of 60 ECTS thus corresponds to 1,650 hours of work for the student.

New students are admitted in August every year.

The study includes:
- Compulsory courses and projects
- Elective courses
- Internship
- Bachelor project
- Workshops

A semester consists of 3-5 courses, which are delimited courses. A course's scope can range from 5 to 10 ECTS points, and a project's scope from 5 to 20 ECTS points.

The purpose, scope, learning objectives and exams of courses are described in this curriculum. For a detailed and complete description of the individual courses, please refer to the course descriptions in force at any given time, which are available on VIA's website and on VIA's Studynet.

There are 4 workshops associated with each of the engineering specialization programmes. Two of which are the same for the specialization.

The programme is structured as illustrated below:

Specialization within Software Engineering Technology:

Semester Theme	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course/ Project 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor project*	**Elective**	**Elective**	**BPR1** Bachelor project			
8. semester *Internalship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**Elective**	**SOM1** Strategy, Organisation and Management	**BUI1** Business Intelligence	**DNP1** .NET Internalet Technology	**SEP7** Semester Project	
6. semester *Study Abroad*	**Elective**	**AND1** Android Development	**DAI1** Data Analytics Infrastructure	**SWE1** Software Engineering	**SEP6** Semester Project	
5. semester *Innovation and Entrepreneur-ship*	**Elective**	**PRM1** Project Management	**RWD1** Responsive Web Design	**ERP1** ERP systems	**SEP5** Semester Project	
4. semester *Cross Discipli-nary work*	**DAT1** Data Analysis	**ECE1** Economics for Engineers	**DIG2** Digitalisation & Industry 4.0	**DBS1** Database Systems	**SEP4** Semester Project	
3. semester *Internalational Business Development*	**IBC1** Intercultural Business Communication	**MAM2** Global Marketing Management	**SDJ1** Software Development with Java		**SEP3** Semester Project	
2. semester *Design and technology*	**GBC2** Global Business Communication	**MAM1** Marketing Management	**MAT1** Mathematics	**EBM1** Engineering Basic: Mechanical design	**SEP2** Semester Project	
1. semester *Software technology*	**GBC1** Global Business Communication	**BUE1** Business Economics	**MATx** Engeneering Mathematics	**EBS1** Engineering Basic: Software technology	**DIG1** Digitalisation 1: CAD & micro controllers	**SEP1** Semester Project

Specialization within Mechanical Engineering Technology

Semester Theme	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course/ Project 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor project*	**Elective**	**Elective**	**BPR1** Bachelorprojekt			
8. semester *Internalship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**Elective**	**SOM1** Strategy, Organisation and Management	**MEM1** Machine elements and design	**ELE1** Electronics	**SEP7** Semester Project	
6. semester *Study Abroad*	**Elective**	**TER1** Thermo dyna-mcs	**MEC2** Mechanics	**DYN1** Dynamics	**SEP6** Semester Project	
5. semester *Innovation and Entrepreneur-ship*	**Elective**	**PRM1** Project Management	**TDE1** Technical Design	**IDP1** Innovation & Product design	**SEP5** Semester Project	
4. semester *Cross Disciplinary work*	**DAT1** Data Analysis	**ECE1** Economics for Engineers	**DIG2** Digitalization 2: Industry 4.0	**PHY1** Physics	**SEP4** Semester Project	
3. semester *Internalational Business Development*	**IBC1** Intercultural Business Communication	**MAM2** Global Marketing Management	**MEC1** Mechanics	**MMT1** Materials and Manufacturing Technologies	**SEP3** Semester Project	
2. semester *Design and technology*	**GBC2** Global Business Communication	**MAM1** Marketing Management	**MAT1** Mathematics	**EBM1** Engineering Basic: Mechanical design	**SEP2** Semester Project	
1. semester *Software technology*	**GBC1** Global Business Communication	**BUE1** Business Economics	**MATx** Noneeering Mathematics	**EBS1** Engineering Basic: Software technology	**DIG1** Digitalisation 1: CAD & micro controllers	**SEP1** Semester Project

5   Compulsory elements of the education programme

All courses and projects in the first four semesters are compulsory and most of the courses will be relevant for the semester project. The purpose of the semester projects are to link the semester courses together combining science, business- and cultural understanding. Being able to create this overview and understanding is the main strength of a Global Business Engineer.

2.-7. semester all contain a semester project amounting to 10 ECTS. Included will be learning inputs in form of videos, online lectures, learning paths etc. amounting up to 2.5 ECTS. The amount of learning inputs can vary in the different semesters. The learning inputs are followed up by discussions initiated by the project supervisor.

The overall purpose of the semester project is to link the semester's courses together as a whole. Study technique. project management, methodology, scientific theory, research methodology and teamwork are introduced through the study in connection with the semester projects.

Each semester is themed, and knowledge and skills are acquired through the courses, while competencies are acquired and can be tested in the project – Problem-oriented learning. The theme for each semester is as follows:

- 1. semester: Software technology
- 2. semester: Design & technology
- 3. semester: International Business Development
- 4. semester: Working Cross Disciplinary
- 5. semester: Innovation & Entrepreneurship
- 6. semester: Study Abroad
- 7. semester: Sustainable Product Development

5.1 1. semester: Software technology

Throughout the semester, the students are to acquire and develop good project management skills. The students must demonstrate their ability to work with cross-disciplinary challenges by implementing theoretical knowledge taught during the semester courses and thus working problem oriented.
More specifically for the first semester, the students must demonstrate their ability to design a proto type for a software solution and clarify if the R&D can be outsourced on the International market.

The purpose of the courses, ECTS and assessment:

Engineering Mathematics (MATx) – 5 ECTS	Assessment:
Students must gain general applied mathematical insight that contributes to an understanding of the crucial importance of mathematics in order to be able to describe, understand and communicate about scientific and technological issues. Through this, they must achieve a solid foundation to be able to commit and contribute actively, constructively and innovatively in their studies. Specifically, students must acquire competence to practice mathematical reasoning and logical thinking.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: Can be oral
Business Economics (BUE) – 5 ECTS	
The purpose of the course is to enable the student to understand decisions about the company's profit maximization under different market conditions (microeconomics). In addition, the student must be able to analyze how macroeconomic changes influence the company's decisions regarding aggregate supply and aggregate demand (macroeconomics).	**Exam**: Individual written 2 x 2 hours; each count 50% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary

Global Business Communication (GBC1) – 5 ECTS	
The purpose of this course is to develop the students' linguistic abilities and general communicative competences in English with special focus on communication in a professional context.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary
Digitalization (DIG1) – 5 ECTS	
The course aims to equip students with basic digital skills in engineering. The course is divided into two tracks: - 3D CAD and digital twins - Micro controllers and automation	**Exam**: Individual written 2 hours. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Engineering Basic: Software Technology (EBS1) – 5 ECTS	
The main purpose of the course is to introduce the student to the field of software engineering; how basic computer program logic works and how to design and model an IT system.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Semester Project (SEP1) – 5 ECTS	
The purpose is to give the students an introduction to problem-based learning through working with a specific problem. The problem includes three subject areas: Business Economics (BUE), Engineering Basics Software (EBS) and Global Business Communication (GBC1) within which areas a problem / case is worked on.	**Exam**: Written Group Project (and process) report and individual reflection report. The total hand-in counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

Volume
30 ECTS credits

5.2 2. semester: Design & Technology

Throughout the semester, the students are to acquire and develop good project management skills. The students must demonstrate their ability to work with cross-disciplinary challenges by implementing theoretical knowledge taught during the semester courses.
More specifically in the second semester, the students must demonstrate their ability to design 3D CAD drawings for a prototype of a mechanical engineering product and subsequently make a marketing plan for the Danish market for the product. The students must plan to launch the product at an exhibition stand at an industrial fair.

Course purpose, ECTS and Evaluation:

Marketing Management (MAM1) – 5 ECTS	Assessment
The purpose of the course is to obtain wide market-oriented knowledge in marketing management and develop skills in order to be able to conduct a complete marketing plan for any business/organisation and product/service using relevant theories and models to identify, design and choose between alternative operational, tactical and strategic marketing possibilities.	**Exam**: Individual 4-hour written exam. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: Can be oral
Global Business Communication (GBC2) – 5 ECTS	
The purpose of this course is to further develop the students' linguistic abilities and general communicative competences in Eng-	**Exam**: Individual written 4 hours The final exam counts 100% **Assessor**: External

lish focusing especially on communication in a professional context. Special focus will be on academic writing requirements in terms of syntax, coherence and structure, on technical English, report writing, presentations and information search on the semester theme. Focus will also be on developing oral communication based on business-related articles.	**Prerequisites**: Yes. **Reexam**: As ordinary
Engineering Basic: Mechanical Design (EBM1) – 5 ECTS	
The purpose of the course is to provide the student with basic knowledge of engineering dynamics. In addition, the student must become familiar with problem solving techniques and achieve a solid basis for further technical and science education.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: Can be oral
Mathematics (MAT1) – 5 ECTS	
The course aims to strengthen and expand the student's basic skills in mathematics, especially in differential calculus.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: None **Reexam**: As ordinary
Semester Project (SEP2) – 10 ECTS	
The purpose of the semester project is for the students to learn to apply professional competencies in a problem-based context. Solve engineering issues based on current and previous semesters' subjects. And demonstrate the ability to prioritize between issues and work in detail with selected issue (s) Problem-based learning through working with a specific problem. The problem includes three subject areas: Marketing Management (MAM1), Mechanical Engineering Basic (MEB) and Global Business Communication 2 (GBC2) within which areas a problem / case is worked on.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Re-exam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

Volume
30 ECTS

5.3 3. semester: International Business Development

Throughout the semester, the students are to acquire and develop good project management skills. The students must demonstrate their ability to work with cross-disciplinary challenges by implementing theoretical knowledge taught during the semester courses.
More specifically in the third semester, students must prepare an International Marketing Plan for resp. a mechanical engineering and a software specialized solution. The students who have chosen machine direction must further demonstrate their ability to design 3D CAD drawings for the prototype of a mechanical engineering product where the students who have chosen software direction must demonstrate their ability to develop a single user system.

Kursernes formål, ECTS og Assessor:

Intercultural Business Communication (IBC1) – 5 ECTS	**Assessment**
The purpose of this course is to enable the student to interact successfully and competently with people from different cultures in their future professional capacities.	**Exam**: Individual oral 20 minutes with 24-hour preparation. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes

	Reexam: As ordinary
Global Marketing Management (MAM2) – 5 ECTS	
The overall purpose of this course is to enable students to device a global marketing strategy and prepare an international marketing plan for any product or service in any export market.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: Can be oral
Software development with Java (SDJ1) – 10 ECTS	
The purpose of the course is to give the student the qualifications to understand core concepts in object-oriented programming, as well as the ability to implement smaller programs in Java based on UML class diagrams.	**Exam**: Individual oral 30 minutes The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary
Mechanics (MEC1) – 5 ECTS	
The course aims to provide the student with basic skills in statics and strength theory to be able to analyse and dimension products, machines and production equipment within the industrial field.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: none **Reexam**: As ordinary
Materials and Technologies (MMT1) – 5 ECTS	
The main purpose of the course is to enable the student to choose relevant types of steel based on material properties and to select relevant manufacturing technologies.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Semester Project (SEP3) – 10 ECTS	
The purpose of the semester project is for the student to focus on learning in the chosen professional specialization (software or mechanical engineer) and put this in a global perspective with a focus on an Internationalization strategy.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

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5.4 4. semester: Working Cross Disciplinary

Throughout the semester, the students are to acquire and further develop good project management skills. The students must demonstrate their ability to work with cross-disciplinary challenges by implementing theoretical knowledge taught during the semester courses. More specifically for the fourth semester, the students must demonstrate their ability to design a cross-disciplinary, sustainable and profitable energy solution.

Kursernes formål, ECTS og Assessor:

Data Analysis (DAT1) – 5 ECTS	**Assessment**
The purpose of the course is to make data analysis application-oriented so that the student can complete and present relevant results from data analyzes. The student will work with statistical arithmetic, data storage technologies, data quality and various data analysis methods.	**Exam**: Individual written 2 hours. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary

Digitalization (DIG2) – 5 ECTS	
The purpose is to provide the student with basic engineering digital competencies within the industry 4.0 area. The course is co-read across the sector to raise the quality of the digital foundation.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Economics for Engineers (ECE1) - 5 ECTS	
The main purpose of the course is to enable students to assess and present the financial consequences of a business case concerning investments in capital equipment and / or product and market development.	**Exam**: Individual written 3 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: None **Reexam**: Can be oral
Databasesystemer (DBS1) – 5 ECTS	
The course has two purposes. Firstly, students are to learn methods for designing, implementing and operating single-user relational databases. Secondly, students are to learn the main principles, architecture and technologies of a typical relational database management system (RDBMS).	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: Can be oral
Physics (PHY1) – 5 ECTS	
The purpose of the course is to provide the student with basic knowledge of thermodynamics and electricity. In addition, the student must become familiar with problem solving techniques and achieve a solid basis for further technical and science education.	**Exam**: Individual written 4 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: Can be oral
Semester Project (SEP4) – 10 ECTS	
The main purpose of the semester project is to apply professional competencies in a problem-based context with a focus on interdisciplinary collaboration between software and mechanical engineering specializations. A common technical solution must be developed, after which the profitability of this must be assessed.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

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5.5 5. semester: Innovation & Entrepreneurship

Throughout the semester, students must acquire and develop good project management skills. The students must demonstrate their ability to work interdisciplinary with innovation and entrepreneurship.
More specifically in the fifth semester, students must demonstrate their ability to design and develop an innovative product / service solution for a given company or organization within the industry.

Kursernes formål, ECTS og Assessor:

Project Management (PRM1) – 5 ECTS	Assessment
The purpose of the course is for the student to become familiar with the tools that can help the project manager to succeed in his/her work. The focus will be on how to organize a complex interdisciplinary project and use relevant tools to minimize the risk of failure.	**Exam**: Written hand-in (a group report counting 60% & an individual reflection counting 40%). **Assessor**: External **Prerequisites**: Yes. **Reexam**: As ordinary

Responsive Web Design (RWD1) – 5 ECTS	
The purpose of this course is to introduce a set of theories and tools in order for students to obtain a proficient level of knowledge and gain a practical set skills for designing and developing responsive web sites for both desktops and mobile devices using basic web programming.	**Exam**: Individual written 2 hours. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes. **Reexam**: Can be oral
ERP-Systems (ERP1) – 5 ECTS	
The purpose of the course is to introduce students to the main aspects of the design and implementation of ERP systems and SAP ABAP / 4 programming.	**Exam**: Individual oral 20 minutes. Exam counts 50% and mandatory course work counts 50% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Innovation and Design of Products (IDP1) – 5 ECTS	
The main purpose of the course is to strengthen student's acquaintance with engineering procedures within the development and assessment of mechanical products from both redesign and conceptual design perspectives. Human-centered design thinking, business assessment and innovation strategies will be of emphasis.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Technical Design (TDE1) – 5 ECTS	
The course aims to provide the student with knowledge and methods for outlining and illustrating machine constructions according to the applicable standardized rules.	**Exam**: Individual oral 20 minutes. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary Individual oral examination, 20 minutes
Semester Project (SEP5) – 10 ECTS	
The purpose of the course is for the student to learn to master the complex innovation process, starting by identifying new ideas, product / service or opportunities that create future growth and value for new and existing companies.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

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5.6 6. semester: Study Abroad

Throughout the semester, students must acquire and develop good project management skills. The students must demonstrate their ability to work with interdisciplinary challenges by implementing theoretical knowledge taught in the semester courses. More specifically in the sixth semester, the student must focus on and further improve his / her skills in the chosen specialization subjects as well as demonstrate the ability to study and work with the technical field, preferably in an international environment at a foreign educational institution.

Kursernes formål, ECTS og Assessor:

Android Programming (AND1) – 5 ECTS	Assessment
The purpose of this course is to provide the student with the knowledge, skills and competencies needed to utilize the tools, principles, patterns and best practices of Android development.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary
Data Analytics Infrastructure (DAI1)	
The course introduces the student to selected topics in the design and implementation of infrastructure to support data analytics. Within this area, the course will introduce students to different tools and techniques for data acquisition, cleansing and integration from different sources, data modelling for analytics and basic visualization.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary
Software Engineering (SWE1) – 5 ECTS	
The purpose is to qualify the student to apply software engineering concepts used to develop Object Oriented software. Structure the software development process by applying SCRUM and Unified Process to conduct analyse, Design and Test-descriptions to exemplify a final solution from a real-lift problem. This involves requirement capturing (Use Cases and non-functional requirements), analysis, domain models, interaction diagrams, design classes, design patterns and test-descriptions etc.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Dynamics (DYN1) – 5 ECTS	
The course aims to provide the student with basic skills in particle dynamics	**Exam**: Individual written 4 hours The final exam counts 100% **Assessor**: External **Prerequisites**: None **Reexam**: As ordinary
Mechanics (MEC2) – 5 ECTS	
The aim of the course is to enable the student to analyse stresses, strains and deformations in structures with the purpose of assessing a machine construction in relation to safety against permanent deformation and fracture.	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Thermodynamics (TER1) – 5 ECTS	
The student will obtain knowledge of the basic theory within thermodynamics and be able to perform elementary thermal calculations. Incorporate energy aspect in mechanical projects and have a basic knowledge of energy specialisation.	**Exam**: Individual written 4 hours **Assessor**: External **Prerequisites**: None **Reexam**: As ordinary
Semester project (SEP6) – 10 ECTS	
The main purpose of the project is to develop or further develop a product or concept via innovation processes and end up with both a technical solution and a bid for a business plan for this. In the project, emphasis must be placed on documentation of the product's sales relevance via thorough market research.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

Volume
30 ECTS

5.7 7. semester: Sustainable Product Development

Throughout the semester, the students are to fine tune their project management skills. The students must demonstrate their ability to work with cross-disciplinary challenges by implementing theoretical knowledge taught during the previous semester courses. More specifically for the seventh semester, are to prepare for their bachelor project comprising all three GBE elements – applied business, applied engineering and applied language and culture focusing on the UN 17 goals.

Kursernes formål, ECTS og Assessor:

Strategy, Organisation & Management (SOM1) – 5 ECTS	Assessment
Formålet med kurset er at de studerende opnår indsigt i, samt opnår færdigheder i anvendelsen af teorier om strategi og ledelses i en organisatorisk sammenhæng.	**Exam**: Individual oral 20 minutes The final exam counts 100%. **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary
Business Intelligence (BUI1) – 5 ECTS	
The main purpose of the course is to equip the student to work with realistic data using professional business intelligence tools such as Microsoft SSIS, SSRS and SSAS	**Exam**: Individual oral 20 minutes The final exam counts 100%. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
.NET Programming (DNP1) – 5 ECTS	
The purpose is to qualify the student to de-scribe and implement the basic concepts of the C# programming language and the .NET developer platform.	**Exam**: Individual written4 hours. The final exam counts 100%. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Machine Elements and Design (MEM1) – 5 ECTS	
To acquire methods and tools in machine elements, technical design and dynamically loaded shafts.	**Exam**: Oral group exam with individual assessment. 30 Minutes The final exam counts 100%. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Electrical Engieering (ELE1) – 5 ECTS	
The main purpose is to gain knowledge about electrical systems, electrical installations and to be able to calculate and select correct electric motors.	**Exam**: Individual oral 20 minutes The final exam counts 100%. **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Semester Project (SEP7) – 10 ECTS	
To develop and practice cross-disciplinary Global Business Engineering competences within sustainable product development and entrepreneurship supporting the framework of the UN 17 Sustainable Development Goals	**Exam**: Group presentation and joint examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes

	Reexam: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

Volume
30 ECTS

6   8. semester: Internship

The Internship comprises a semester of 30 ECTS and timewise is placed in the 8th semester of the programme. As a general rule the Internship period is paid and settled in a private or public company in Denmark or abroad. Student must be on an Internship for a minimum of 20 full weeks excluding holidays, etc.

The purpose of the Internship is for the student to acquire insight into practical common engineering work corresponding to engineering assistant work, combined with the integrated application of the acquired concepts, methods and techniques of the discipline in the first seven semesters.

The student themselves is responsible for finding an Internship, which must be approved by VIA, who appoints a supervisor for the Internal.

In collaboration with the company, the student prepares a plan for the Internship with appertaining formulated assignments.

The basis for assessment of the Internship is an ongoing report from the student to VIA, feedback from the Internship company and a presentation where the supervisor can ask elaborating questions about the content of the Internship.

If the engineering Internship is interrupted before the end of the agreed Internship period, the Internship supervisor must, in consultation with the head of the education programme, assess whether the Internship has been of sufficient length and content for there to be grounds for passing the Internship present.

The Internship is assessed approved / not approved by the internal supervisor.

7   Electives

The Global Business Engineering program consists of 25 optional ECTS credits, where the student can choose subjects in VIA's engineering programs. Descriptions of the Global Business Engineering education's elective courses appear from the overview below as well as from the course descriptions in appendix 3. Subjects in other fields such as Mechanical engineer or software engineer can be found in the respective curricula as well as on studynet.

It is also possible to choose one course of 5 ECTS from another education program at VIA, but not courses where the content essentially consists of material from the previous courses of study. Any course choice from other programs must be approved by a study advisor in the engineering programs, as it must be ensured that the chosen course is relevant to the program and constitute an increasing academic level.

Electives are offered to the extent that there are sufficient students enrolled in the elective. If the elective is not offered, or if too many people enroll in the course, this can result in the student being assigned his or her second priority.

The following elective courses are offered at the Global Business Engineering program. (Selected electives are taught in Danish - the rest in English).

Subject (5 ECTS)	Assessment
Digital Marketing (DMA1)	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Strategic Sales Management (SSM1)	**Exam**: Individual oral 20 minutes. The final exam counts 100% **Assessor**: External **Prerequisites**: None **Reexam**: As ordinary
Entrepreneurship (ENT1)	**Exam**: Group presentation and joint examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100%. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Product Management (PDO1)	**Exam**: Individual oral 20 minutes **Assessor**: Internal **Prerequisites**: None **To be developed** **Reexam**: As ordinary

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions of the examination are given in Appendix 3.

8 Technical Workshops

The workshops are practice-related courses lasting one week (not ECTS-giving). The courses are conducted in parallel with 2-5 semesters. All workshops are compulsory and some are located outside campus.

The technical workshops structured as illustrated below:

Semester	Workshop Software Specialisation	Workshop Mechanical Specialisation
5. semester	**PWS4_SW – AR/VR technology** Introduction to Augmented- & Virtual Reality technologies	**PWS4_ME – CNC Machining** Practical work shop in CNC machining, CAD/CAM and assembly techniques
4. semester	**PWS3 – Advanced Excel** Introduction to advance Excel that will make you work like a professional.	**PWS3 – Advanced Excel** Introduction to advance Excel that will make you work like a professional.
3. semester	**PWS2_SW - GitHub** Introduction to Git and version control (sharing, editing and storage of codes)	**PWS2_ME – Turning and Milling** Practical work shop in machining, measuring techniques and safety
2. semester	**PWS1 – Know your Profession** What jobs can a Global Business Engineer take on within the different field of specialisations.	**PWS1 – Know your Profession** What jobs can a Global Business Engineer take on within the different field of specialisations.

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions are given in Appendix 3.

9 Bachelor Project

BPR1

The programme is concluded with a bachelor project (BPR1) which constitutes 20 of the total 270 ECTS credits of the programme and is finalized with an examination.

The bachelor project must demonstrate independent critical reflection within the chosen topic, and must document the student's ability to apply engineering theories and methods. The bachelor project must also reflect the student's ability to express themselves in an academic and structured manner within their subject.

It is highly recommended that the bachelor project is done in groups of 2-4 students.

The bachelor project includes an independent experimental, empirical and/or theoretical treatment of a practical problem in connection with the central topics of the education programme.

The project must be documented in the form of a report containing a project basis, solution description, calculations, drawings, etc. If the report is a group assignment, it must be clear who wrote which sections of the report.

The students are examined in the project by oral examination/group test with individual assessment in accordance with the programme's overall goals as described in Section 1 of the Curriculum. The basis for examination is the bachelor project. It is a prerequisite for participation in the exam that the bachelor project is submitted within the stipulated deadline and meets the described criteria for the project.

Examinations can take place at the earliest when all the other examinations of the programme, including internships, have been passed. The examination is assessed according to the 7-point scale and with the participation of an external examiner.

Bachelor projekt (BPR1)	Assessment
The purpose is that students must show that they have achieved the objectives set for the Global Business Engineering programme by solving a real-life problem using relevant theories and methods. The project must cover relevant topics within both technical, business and communication	**Exam**: Group examination with individual assessment 45 minutes per student. The final exam counts 100% **Assessor**: External **Prerequisites**: Yes **Reexam**: As ordinary

10 Title and issue of diploma

Graduates who have completed the studies under this curriculum are entitled to use the title **Bachelor of Engineering in Global Business Engineering** and the title **Bachelor of Engineering** in an engineering firm.

Upon completion of the programme, VIA University College issues a diploma indicating title, programme, and information about the results of the grades obtained. Furthermore, the diploma contains information about the bachelor thesis. In addition, the admittance level on which the graduate was admitted to the programme is noted.

Should the education be discontinued, proof of passing study units is issued.

11 Appendix 1 (relevant for students starting in 2019 and 2020)

For students admitted to the programme in 2019 up to and including 2020, the following transitional arrangement will enter into force from August 2021.

Courses that are no longer part of the curriculum has to be passed the no later than winter exam 2022.

Specialization within Software Engineering Technology

Semester *Theme*	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor Project*	**Elective**	**Elective**	**BPR1** Bachelor Project			
8. semester *Internship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**DNP1** .NET programming	**ERP1** ERP systems	**MST1 /SOM1** Strategy, Organisation & Management	**SEP7** Semester Project		
6. semester *Study Abroad*	**Software Elective**	**Software Elective**	**Elective**	**Elective**	**BUI** Business Intelligence	**AND1** Android Development
5. semester *Innovation & Entrepreneur-ship*	**SDJ2** Software Development with Java		**SWE1** Software Engineering	**LANG3** Language	**SEP5** Semester Project	
4. semester *Cross Disciplinary*	**DBS1** Database Systems	**RWD1** Responsive Web Design	**FCM1 / ECE1** Financial Management / Economics for Engineers	**LANG2** Language	**INO1** Cross Disciplinary Innovation	**SEP4** Semester Project
3. semester *International Business Development*	**SDJ1** Softwareudvikling med Java		**BUE1** Business Economics	**LANG1** Language	**SEP3** Semester Project	
2. semester *Design & Technology*	**GBC2** Global Business Communication	**MAT2** Mathematics	**MAM2** Global Marketing Management	**ENB-M1** Engineering Basic: Mechanical de-sign	**IBC1** Intercultural Business Communication	**SEP2** Semester Project
1. semester *Robotics*	**GBC1** Global Business Communication	**MAT1** Mathematics	**MAM1** Marketing Management	**ENB-ICT1** Engineering Basic: Software Technology	**SSE1** Study Technique for Engineers	**SEP1** Semester Project

Specialization within Mechanical Engineering Technology

Semester Theme	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor Project*	**Elective**	**Elective**	**BPR1** Bachelor Project			
8. semester *Internship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**MEM1** Machine Elements and Design	**ELE1** Electronics	**MST1 /SOM1** Strategy, Organisation & Management	**SEP7** Semesterprojekt		
6. semester *Study Abroad*	**Mechanical Elective**	**Mechanical Elective**	**Elective**	**Elective**	**MEC2** Mechanics	**TER1** Termo Dynamics
5. semester *Innovation & Entrepreneur- ship*	**MMT1** Materials and technologies	**CAD2** Avanceret design in 3D CAD	**TDE1** Technical Design	**LANG3** Language	**SEP5** Semester Project	
4. semester *Cross Disciplinary*	**DYN1** Dynamics	**ENB-M2/PHY1** Electronics and thermo Dynamics	**FCM1 / ECE1** Financial Management / Economics for Engineers	**LANG2** Language	**INO1** Cross - Disciplinary Innovation	**SEP4** Semester Project
3. semester *International Business Development*	**MEC1** Mechanics	**MAT3** Mathematics	**BUE1** Business Economics	**LANG1** Language	**SEP3** Semesterprojekt	
2. semester *Design & Technology*	**GBC2** Global Business Communication	**MAT2** Mathematics	**MAM2** Global Marketing Management	**ENB-M1** Engineering Basic: Mechanical Design	**IBC1** Intercultural Business Communication	**SEP2** Semester Project
1. semester *Robotics*	**GBC1** Global Business Communication	**MAT1** Mathematics	**MAM1** Marketing Management	**ENB-ICT1** Engineering Basic: Software Technology	**SSE1** Study Technique for Engineers	**SEP1** Semester Project

The learning objectives of the courses (knowledge, skills and competencies) and further information about the form and conditions are given in Appendix 3.

Materials and Technologies (MMT1) – 5 ECTS	Assessment
The main purpose of the course is to enable the student to choose relevant types of steel based on material properties and to select relevant manufacturing technologies.	**Exam**: Individual oral 20 minutes. Exam counts 100% **Assessor**: Internal **Prerequisites**: None **Reexam**: As ordinary
Machine Elements and Design (MEM1) – 5 ECTS	
To acquire methods and tools in machine elements, technical design and dynamically loaded shafts.	**Exam**: Oral group exam with individual assessment. 30 Minutes The final exam counts 100%. **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary
Advanced Design in 3D-CAD (CAD2) – 5 ECTS	
The main purpose of the course is to provide the student with the knowledge and methods in the areas of more advanced CAD application used in an industrial environment.	**Exam**: 2 hours Individual test (40%) og group handin (60%) **Assessor**: Internal **Prerequisites**: Yes **Reexam**: Can be oral
Semester Project (SEP5) - 10 ECTS	
The main purpose of the project is to develop or re-develop a product or concept via innovation processes and end up with both a technical solution and a well-founded business plan.	**Exam**: Group examination with individual assessment. 15 minutes per student – maximum 1 hour per group. The final exam counts 100% **Assessor**: Internal **Prerequisites**: Yes **Reexam**: As ordinary

12 Appendix 2 (relevant for students starting in 2018 or earlier)

For students admitted to the programme in 2018 or earlier, the following transitional arrangement will enter into force from August 2021

Specialization within Software Engineering Technology (no changes)

Semester *Theme*	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor Project*	**Elective**	**Elective**	**BPR1** Bachelor Project			
8. semester *Internship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**DNP1** .NET Programming	**ERP1** ERP systems	**MST1 /SOM1** Strategy, Organisation & Management	**SEP7** Semester projekt		
6. semester *Study Abroad*	**Elective**	**Elective**	**Software Elective**	**SWE** Software Engineering	**BUI** Business Intelligence	**AND1** Android Development
5. semester *Innovation & Entrepreneur-ship*	**SDJ2** Software Development with Java		**WEE** Web Engineering	**LANG3** Language	**SEP5** Semester project	
4. semester *Cross Disciplinary*	**DBS1** Database Systems	**RWD1** Responsive Web Design	**FCM1 / ECE1** Financial Management / Economics for Engineers	**LANG2** Language	**INO1** Cross - Disciplinary Innovation	**SEP4** Semester Project
3. semester *International Business Development*	**SDJ1** Softwareudvikling med Java		**BUE1** Business Economics	**LANG1** Language	**SEP3** Semester Project	
2. semester *Design & Technology*	**GBC2** Global Business Communication	**MAT2** Mathematics	**MAM2** Global Marketing Management	**ENB-M1** Engineering Basic: Mechani-cal design	**IBC1** Intercultural Business Communication	**SEP2** Semester Project
1. semester *Robotics*	**GBC1** Global Business Communication	**MAT1** Mathematics	**MAM1** Marketing Management	**ENB-ICT1** Engineering Basic: Software Technology	**SSE1** Study Technique for Engineers	**SEP1** Semester Project

Specialization within Mechanical Engineering Technology

Semester *Theme*	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Course 5 ECTS	Project 5 ECTS	Project 5 ECTS
9. semester *Bachelor Project*	**Elective**	**Elective**	**BPR1** Bachelor Project			
8. semester *Internship*	**INP1** Engineering Internship					
7. semester *Sustainable Product Development*	**MEM1** Machine Elements and - Design	**ELE1** Electronics	**MST1 /SOM1** Strategy, Organisation & Management	**SEP7** Semester Project		
6. semester *Study Abroad*	**MEC2** Mechanics	**MED1** Machine Element Design	**TER1** Thermo Dynamics	**Mechanical Elective**	**Elective**	**Elective**
5. semester *Innovation & Entrepreneur-ship*	**TEM1** Technology and Environment	**MTR1** Material Science	**TDE1** Technical Design	**LANG3** Language	**SEP5** Semester Project	
4. semester *Cross Disciplinary*	**DYN1** Dynamics	**ENB-M2** Electronics and thermo Dynamics	**FCM1 / ECE1** Financial Management / Economics for Engineers	**LANG2** Language	**INO1** Cross - Disciplinary Innovation	**SEP4** Semester Project
3. semester *International Business Development*	**MEC1** Mechanics	**MAT3** Mathematics	**BUE1** Business Economics	**LANG1** Language	**SEP3** Semester Project	
2. semester *Design & Technology*	**GBC2** Global Business Communication	**MAT2** Mathematics	**MAM2** Global Marketing Management	**ENB-M1** Engineering Basic: Mechani-cal design	**IBC1** Intercultural Business Communication	**SEP2** Semester Project
1. semester *Robotics*	**GBC1** Global Business Communication	**MAT1** Mathematics	**MAM1** Marketing Management	**ENB-ICT1** Engineering Basic: Software Technology	**SSE1** Study Technique for Engineers	**SEP1** Semester Project

13 Appendix 3: Courses in the Global Business Engineering Programme

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
GBE-BUE1	Business Economics	5	After the course the students should be able to: • Identify and sketch the firm's demand and supply functions • Identify and sketch the optimal price and quantity that maximizes the firm's profit. • Identify and sketch the different market structures • Identify and sketch the aggregate demand and supply for the market / industry • Identify the Macroeconomic tools and objectives • Identify and describe the different macroeconomic policies	After the course the students should be able to: • use appropriate tools to model company price and output decisions under different market structures • analyze and assess efficiency and welfare optimality of perfectly and imperfectly competitive markets • analyze and asses the effects of externalities and public goods on efficiency • analyze and assess government policies aimed at improving welfare.	After the course, the students should be able to: • use the most important theories from "Microeconomics" to analyze the business microeconomic environment • understand cost structures of firms and be able to find the optimal price and quantity that will maximize a firm´s profit under different assumptions of market structures • use the most important theories from "Macroeconomics" to obtain knowledge on the global macro economy • analyze and assess the connection between various macroeconomic changes and the significance of the change to the concrete company	Prerequisites for exam: None Exam type: Two written 2 hours individuals tests each counting for 50 % of the total grade. The course grade is the rounded average of the grades for the two tests. If the average of the two tests is < 02 the student must take the re-exam for the test(s) with a grade < 02. Tools allowed: All – except access to internet Re-exam: Same as for original exam.

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
GBE-GBC1	Global Business Communication 1	5	After the course the students should be able to: • understand the international business environment. • describe communication models. • explain the writing process. • identify approaches to writing routine, positive and negative messages in English. • describe presentation techniques in English. • account for different aspects of professional writing. • account for different aspects of the semester theme.	After the course the students should be able to: • analyse a communication situation as to target group, message, choice of communication channel etc. • communicate precisely and with a varied vocabulary in English, orally as well as in writing. • develop material to be used in a company's internal as well as external communication using correct terminology, syntax and stylistics. • discuss linguistically complex texts in English. • apply relevant terminology within business and technical subjects. • apply relevant communication models. • present the results of self-studied subjects in English professionally. • write a project report in a professional style used in business communication and according to the guidelines for writing reports. • present the results of the project work orally in a clear and concise language.	The students should, in their project work, during their internships, and in their future jobs as global business engineers, be able to: • apply selected relevant approaches when writing professional business messages. • communicate effectively and professionally with a company's internal and external stakeholders, using correct terminology and syntactically correct structures in speech and writing. • interact and cooperate with people from different cultural backgrounds. • critically acquire new knowledge within relevant job-related areas	Prerequisites for exam: Indstillingskriterier: The mandatory course activities (one individual test, a group presentation, and a written group assignment) must be completed and handed in before deadline and accepted/approved by the lecturer. Exam type: 4-hour written exam with external examiner. Tools allowed: All aids are allowed except access to the Internet.

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
GBE-MATx	Engineering Mathematics	5	After the course the students should be able to solve simple mathematical problems within the areas of: • Basic order of operations: solving linear equations and fraction rules • Functions: Logarithmic, exponential and trigonometric functions including laws of exponents • Vectors in 2D: Order of operations, scalar, angle, magnitude, determinant, area, equations, perpendicularity, parallelism, lines, decomposing of a vector. • Differential calculus: Power rule, chain rule, product rule, quotient rule, tangent, exponential, logarithmic and trigonometric functions. • Integration: Power rule and definite integrals. • Number sets • Number systems	After the course the students should be able to: • analyse simple problems within 2D vectors and differential calculus, • apply relevant terminology within basic mathematical subjects.	In their project work, during business and engineering courses which are part of the global business engineering programme, and in their future jobs as global business engineers, the students should be able to: •Apply mathematical knowledge in solving specific problems	Prerequisites for exam: None Exam type: Written 4 hour individual test The course grade is the rounded average of the grades for the two tests. If the average of the two tests is < 02 the student must take the re-exam for the test(s) with a grade < 02. Re-exam: Same as for original exam. Tools allowed:Course literature according to the course descriptionPersonal notesLaptop (no web access)Calculator.

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
ME-DIG1	Digitalisation 1	5	The student will acquire knowledge of the following: · The user interface and understanding of the structure in a 3D CAD-system · Use sketching, constraints and dimensions as basis for 3D features · Create geometrical features · Create assemblies · Create and edit 2D drawings for parts and assemblies · Use of CAD in Maker Space · Recognize and identify datatypes · Data acquisition with different sensors · Use of actuators in automatic processes · Basic knowledge about I/O as well as ADC and DAC	The student will acquire skills in: · Create 3D parts and assemblies in a 3D CAD-system · Assemble and document parts on a 2D drawing · Use digital twins in connection with 3D printers og CNC machines · Recognise and identify datatypes · Write, test and document simple scripts for controlling a microcontroller · Data acquisition · Use of sensors and actuators	After completing the course the student will be able to: · Use a 3D CAD program · Account for data flow and relate it to microcontroller systems · Design and implement simple circuits with microcontrollers, sensors and actuators.	Prerequisites for exam: Mandatory assignments approved by the teachers. Exam type: Individual written examDuration is 2 hoursThe exam counts for 100% of the final gradeInternal censor Tools allowed: All Re-exam: Same as ordinary

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
GBE-EBS1	Engineering Basic - Software Technology	5	• Describe the basics of computer software program logic and flow. • Describe imperative programming concepts, including assignments, loops, variables, conditions, and expressions. • List common data types and describe the concept of type conversion. • Identify the basic components of computer hardware architecture. • Describe the components and properties of embedded systems. • Identify the basic UML activity diagram notations and symbols. • Identify and describe the different stages of a software development process.	• Solve basic programming tasks through a visual programming language and scripting. • Work with basic data structures, including arrays. • Apply the basic operations of boolean algebra. • Design and describe an IT system, including using UML activity diagrams. • Create simple interactive applications and games.	• Design and implement an IT system. • Design, construct, and program embedded systems for specific activities and scenarios. • Delimit an open problem domain. • Solve problems through an analytical, engineering approach.	Prerequisites for exam: Mandatory assignments handed in before deadline and accepted. Exam type: Written examination. Duration: 1 hour. Multiple choice and written answers. Internal examiner. Tools allowed: None. Re-exam: As ordinary exam.

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
GBE-SEP1	Semester Project 1	5	**Project method learning objectives:** The students must be able to: Effective teams - explain included theories about group dynamics, team collaboration and conflict resolution. Own learning process - refer to involved theories of learning, motivation, feedback and study techniques. Project framework - identify relevant knowledge in relation to academic and technical written communication, including the report's structure, references and source management. - identify relevant presentation techniques for the target group, as well as use presentation techniques. PBL - explain basic elements of PBL. - identify relevant issues and specific requirements for a problem formulation. Project management identify relevant project management methods,	**Project method learning objectives:** The students must be able to: Effective teams • jointly formulate and apply a group contract in the group work. • enter into and establish collaboration with the project group and supervisor. Own learning process • apply knowledge of learning theory and motivation theory in connection with own learning process and give and receive feedback. Project framework • act in a source-critical way as well as use references and source management, including rules for plagiarism. • communicate the results of the project work and the project group's learning process in a structured way using professional concepts, both in writing and graphically. • communicate in writing to different target groups. Problem-based learning • set up a problem formulation, describe different solution options and explain solution proposals. Project management • explain the choice of and use of tools and methods for project management in order to achieve concrete goals in the	**Project method learning objectives:** The students must be able to: Effective teams • describe and reflect on the project group's collaboration - including their own efforts - to define opportunities for improvement for future projects. Own learning process • reflect on their own ability to learn through the various teaching activities, including the project group's work. Problem-based learning • take responsibility for the student-led part of the semester project **Professional learning goals** The students must be able to: Engineering Basics Software (EBS) • reflect on the development of an autonomous robot for a specific purpose. • plan and execute a software development process Business Economics (BUE) • plan and carry out a macroeconomic analysis of a given country. • reflect on the importance of macroeconomic conditions in a given country in	Admission criteria for exam: Project report and process report must be submitted before the deadline set by the supervisors. The project report should be between 20-22 pages excluding appendices. (1 page = 2400 characters including spaces). The process report should be according to guidelines. Examination form: Individual grades are given on the basis of an overall assessment of the submitted work. It must be clearly stated who is the author of the individual parts of the project report and the process report. Internal examiner. Permitted aids: All Reexamination: The internal examiner decides whether the student who has not passed the semester project must submit a revised project report or complete a new project. For students who have not passed the semester project, an information meeting will be held at the end of the spring semester. Here, information is provided on specific deadlines and detailed courses for the project work, just as new project groups are formed where possible in relation to the number of failed students in the individual semesters. Based on the feedback the students have received after the ordinary exam, either a new project must be prepared or the non-passed project must be revised.

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
			including planning, meeting management, risk assessment and quality assurance **Professional knowledge learning goals** The students must be able to: Engineering Basics Software (EBS) - identify and describe the different stages of a software development process. - identify key components of an autonomous robot. - explain the functionality of a robot. - describe and give examples of autonomous systems. - describe and explain a software program for an autonomous robot. Business Economics (BUE) - identify and describe macroeconomic characteristics and development trends for a given country. Global Business Communication 1 (GBC1) - account for theoretical	project work. **Professional learning goals** The students must be able to: Engineering Basics Software (EBS) • analyze a problem area in order to derive requirements. • design and build a robot. • develop software to control a robot. • use dynamic models to describe the behavior of a robot. • perform tests in relation to derived requirements. • apply a project methodology to structure the development work. Business Economics (BUE) • identify and analyze the macroeconomic policies pursued in a given country and its significance for companies' decisions to outsource production and development tasks to that country. Global Business Communication 1 (GBC1) • structure and formulate a written project report in English on the semester project's problem formulation, solution proposals and conclusion in clear and precise English using correct subject terminology, grammar and syntax. • structure and describe a process report on the work on the	connection with decisions and outsourcing Global Business Communication 1 (GBC1) • reflect on their own ability to communicate in writing in English on behalf of a company using correct subject terminology. • reflect on collaboration across cultures.	

Code	Title	ECTS	Knowledge	Skills	Competences	Assessment
			and practical knowledge about how companies communicate professionally both internally and externally. - explain relevant aspects in written presentation techniques.	semester project in clear and precise English.		

2nd Semester – 9th Semester - *will follow*