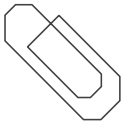


Unfold your talent
VIA University College



Curriculum Programme section

GBE Global Business Engineering

Valid from August 2017

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Introduction

In accordance with the Diploma Engineering Education programme, the purpose of the diploma-engineering programme is to qualify students to, nationally and internationally, carry out the following business functions;

- 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 task
- 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 endeavors to work in accordance with a common DNA for all engineering courses. The DNA contains a description of what especially characterizes the engineering programmes at VIA, as well as what to expect from a graduate from our engineering programmes.

At VIA Engineering, we are practice- and project oriented and focused on the surrounding world. These goals are achieved in the form of qualified graduates obtained through targeted education, relevant research and development as well as cooperation and ongoing dialogue with the business community. The programmes at VIA Engineering will qualify the graduates to perform practice- and development-oriented business functions.

English-language programmes and international admission is a characteristic 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 a broad practical experience, and they understand how to anchor theory in practice through laboratory work, company visits and projects for and in collaboration with companies.

To ensure the usefulness of the content of the programme, the principles of the CDIO education concept are applied, ensuring that the individual courses are continuously reviewed, evaluated and developed.

1 Identity of the Programme

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

The study location is either Horsens or Aarhus (1-4 semester), however all courses from 5th semester are taught in Horsens.

GBE graduates are qualified to:

- Operate primarily in the industrial market, especially in mechanical- and IT-related industries.
- Fulfill managerial positions within design and implementation of technical solutions, as well as within marketing and sales.

- 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 the master degree.

The objectives of the programme are achieved primarily through:

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

2. Structure and content

The programme is organized as an ordinary full-time higher education. Science and technology make up about two-thirds of the study programme. Business and language courses make up the last third 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 individualized 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 an ICT-specialization (GBE-ICT) or a mechanical-specialization (GBE-M). For students who complete the programme without an individually organized course sequence, the programme build-up, structure and progression, will be as indicated in the following two tables for respectively GBE-M and GBE-ICT.

GBE-M:

Semester	Course	Course	Course	Course/ project	Project	
9th semester	Elective	Elective	BPR 1 Bachelor project			
8th semester	Internship					
7th semester	ME MDI 1	ME ELE 1	MST Management & Strategy	SPE 7 Semester project		
6th semester Study Abroad	ME MEC 2 Mechanics	ME MED 1	ME TER 1 Thermo- dynamics	Elective Mechanical engineering	Elective	Elective
5th semester	ME TEM 1 Technology 1	ME MTR 1 Material Sci- ence 1	ME TDE 1 Construction 1	LANG 3 German/ French/ Spanish/ Danish	SEP 5 Semester project	
4th semester	ME DYN 1 Dynamics	ME ENB M 2 Electronics, Thermo-dy- namics	LANG 2 German/ French/ Spanish/ Danish	FCM Financial Management	INO 1 Cross disciplinary innovation	SEP 4 Semester project
3rd semester	ME MEC 1 Statics	MAT 3 Mathematics 3	LANG 1 German/ French/ Spanish/ Danish	BUE Business economics	SEP 3 Semester project	
2nd semester	ENB M 1 Intro- duction to M- engineering	MAT 2 Mathematics 2	GBC 2 Communica- tion in a professional context 2	MAM 2 Marketing Management 2	IBC Intercultural Business Communica- tion	SEP 2 Semester project
1st semester	ENB ICT 1 Introduction to ICT- engineering	MAT 1 Mathematics 1	GBC 1 Communica- tion in a pro- fessional context 1	MAM 1 Marketing Management 1	SSE 1 Study skills for engineers	SEP 1 Semester project

GBE-ICT:

Semester	Course	Course	Course	Course/ project	Project	
9th semester	Elective	Elective	BPR 1 Bachelor project			
8th semester	Internship					
7th semester	IT DNP 1 .NET programming	IT AND 1 Android programming	MST Management & Strategy	SPE 7 Semester project		
6th semester Study Abroad	IT DBS 1 Database systems 1	IT CON 1 Computer networks	IT CAL 1 Computer architecture	Elective ICT engineering	Elective	Elective
5th semester	IT SWE 1 Software engineering	IT SDJ 2 Software development with Java 2		LANG 3 Ger- man/ French/ Spanish/ Danish	SEP 5 Semester project	
4th semester	IT LRL 1 Lego robot lab 1	IT RWD 1 Responsive web design	LANG 2 German/ French/ Spanish/ Danish	FCM Financial Management	INO 1 Cross disciplinary innovation	SEP 4 Semester project
3rd semester	IT SDJ 1 Software development with Java 1		LANG 1 German/ French/ Spanish/ Danish	BUE Business economics	SEP 3 Semester project	
2nd semester	ENB M 1 Introduction to M- engineering	MAT 2 Mathematics 2	GBC 2 Communica- tion in a professional context 2	MAM 2 Marketing Management 2	IBC Intercultural Business Communica- tion	SEP 2 Semester project
1st semester	ENB ICT 1 Introduction to ICT- engineering	MAT 1 Mathematics 1	GBC 1 Communica- tion in a professional context 1	MAM 1 Marketing Management 1	SSE 1 Study skills for engineers	SEP 1 Semester project

The planned duration of the programme is 4 ½ years divided into 9 semesters and a total of 270 ECTS points. A single ECTS point represents 27.5 hours of study activity.

Each year the student will be able to complete study activities corresponding to 60 ECTS points. Study activities are,

- Mandatory courses and projects
- Internship
- Elective courses
- Bachelor project

All mandatory and elective courses will be either 5 or 10 ECTS. Projects range from 5 to 20 ECTS. The content, learning goals, evaluation methods and tests of each course are described in this curriculum. A more detailed description of each course is available online.

3. Compulsory elements of the programme

All courses on the first five semesters are compulsory, and most of the courses are included in a semester project. The overall goal of the semester projects is to tie the courses together and thereby combine science, language & culture, and business, which is the main advantage of the GBE-programme. Project methods, philosophy of science, research methods, teamwork, and documentation skills are taught in context of the semester projects.

After completing 2nd semester, the GBE-student must choose either a mechanical specialization or an ICT-specialization – therefore the engineering courses from 3rd to 9th semester of the GBE-programme will be either mechanical engineering courses or ICT-engineering courses (see 2. *Structure and content* for more details of respectively the GBE-M-programme and the GBE-ICT-programme).

3.1 1st semester: Robotics

Content

ENB ICT 1 (Introduction to ICT-engineering 1)
MAT 1 (Mathematics 1)
GBC 1 (Communication in a professional context 1)
MAM 1 (Marketing Management 1)
SSE 1 (Study skills for engineers)
SEP 1 (Semester project)

Learning goals

The students must be able to solve a problem based case description given which comprises ICT-engineering, business, and communication.

Knowledge

- The student will gain knowledge of basic computer hardware architecture and basic computer software architecture
- The student will obtain knowledge within basic areas of mathematics, algebra, 2D and 3D vectors, trigonometry and geometry
- The student should acquire knowledge about the international business environment, communication models, professional writing and presentation in English
- The student will obtain wide knowledge on marketing management in order to be able to design a marketing plan using relevant theories and models to identify, design and choose between alternative operative, tactic and strategic possibilities.

Skills

- Solving simple mathematical problems within the areas of algebra, 2D and 3D vectors, trigonometry and geometry
- Designing and describing an IT system, including using Activity Diagrams
- Solving simple physical challenges by programming a robot
- Analyze a communication situation and communicate precisely and with a varied vocabulary in English, orally as well as in writing
- Read and understand linguistically complex texts in English as well as apply relevant terminology within business and technical subjects
- Choose relevant marketing theories and models in a given context, moreover identify and evaluate marketing strategies.
- Perform segmentation, macro analysis, competitor analysis, and customer analysis regarding need, wants and buying behavior in the B2C and B2B market
- Design a marketing mix in line with situation analysis, target group and chosen strategies.

Competencies

- Using mathematical theory to solve simple mathematical problems within the areas of Algebra, 2D and 3D vectors, Trigonometry and Geometry.
- Being able to understand the world of IT programming.
- Applying selected relevant approaches when writing professional business messages in an international business environment and communicate effectively and professionally with a company's internal and external stakeholders in speech and writing. Furthermore, the student should be able to critically acquire new knowledge within relevant engineering areas.
- Using basic marketing management theories and models and make a structured situational analysis of a company and its marketing environment.

Exams

ENB ICT 1	5 ECTS	Oral
MAT 1	5 ECTS	Written
GBC 1	5 ECTS	Oral and written
MAM 1	5 ECTS	Oral and written
SSE 1	5 ECTS	Passed/not passed
SEP 1	5 ECTS	Oral and written

3.2 2nd semester: Design & Technology

Content

- ENB M 1 (Introduction to mechanical engineering 1)
- MAT 2 (Mathematics 2)
- GBC 2 (Communication in a professional context 2)
- MAM 2 (Marketing Management 2)
- SEP 2 (Semester project)

Learning goals

The students must be able to solve a problem based case description given which comprises mechanical engineering, business, and communication.

Knowledge

- The student will acquire knowledge in project work, study new topics and apply theory learned in project methodology, communication, physics, and technical drawing within searching and studying technical information, technical drawing for production using 3D CAD, practical tests and data collection, and technical report writing according to the guidelines.
- The student will acquire knowledge about the SI unit system, kinematics (velocity and acceleration in 1D and 2D, projectile motion), and dynamics (Newton's Laws, work, kinetic and potential energy, conservation of mechanical energy, friction, springs).
- The student will be able to solve simple mathematical problems within the areas of functions (trigonometric, exponential, logarithm), differentiation, optimization, integration, vector valued functions in 2D.
- The student will acquire knowledge about global marketing strategies, the complete range of market entry methods, internationalization strategies for small and large companies, and the challenges related to the internationalization process.
- The student will be able to identify requirements to project writing in English, describe different aspects of the semester theme and account for the conventions of technical writing in English.

Skills

- Acquire skills within group work, report writing, CAD drawing, test procedures, and technical conclusions.
- Be able to correctly use the SI-unit system and perform dimensional checks of calculations and, moreover, analyze and solve simple problems within kinematics and dynamics.
- Be able to understand and solve simple problems including functions, differentiation and integration of functions with one unknown factor, and understand and solve 2D vector valued functions.
- Be able to build a market profile of a country by conducting a PEST and market analysis
- Be able to provide input to international market strategy development and critically evaluate a company's international marketing environment and its current strategy and, moreover, be able to design an international marketing mix
- Analyse a communication situation and communicate precisely orally as well as in writing
- Apply different academic writing requirements in terms of syntax, coherence and structure and discuss linguistically complex texts in English
- Apply relevant terminology within business and technical subjects, and the conventions of technical writing in English

Competencies

- Gaining competences in identifying, drawing and applying suitable components in a machine design. Furthermore, the student will obtain competences in arguing, relating and justifying technical solutions.
- Gaining competences in reading scientific text including formulae, graphs, diagrams etc., and applying an analytical and systematic approach to simple, stylized engineering problems, communications simple calculations using concise language, formulae, and sketches.
- Applying mathematical knowledge in solving specific problems.
- Gaining competences to identify global opportunities and assess the associated risks
- Developing a global marketing strategy and an international marketing plan that is aligned with the objectives of the company.
- Applying selected relevant approaches when writing professional business messages, and communicate effectively and professionally with a company's internal and external stakeholders from different cultural backgrounds.

Exams

ENB M 1	5 ECTS	Written
MAT 2	5 ECTS	Written
MAM 2	5 ECTS	Written
GBC 2	5 ECTS	Written
SEP 2	5 ECTS	Written and oral

3.3 3rd semester:

Content

GBE-M:

ME MEC 1 (Statics 1)
MAT 3 (Mathematics 3)
LANG 1 (German/French/Spanish/Danish 1)
BUE 1 (Business Economics 1)
SEP 3 (Semester Project)

GBE-ICT:

IT SDJ 1 (Software Development with Java 1)
MAT 3 (Mathematics 3)
LANG 1 (German/French/Spanish/Danish 1)
BUE 1 (Business Economics 1)
SEP 3 (Semester Project)

Learning goals

Knowledge

Skills

Competencies

Exams

IT SDJ1 (GBE-ICT)	10 ECTS	
ME MEC 1 (GBE-M)	5 ECTS	
MAT 3	5 ECTS	Written
BUE 1	5 ECTS	
LANG 1	5 ECTS	
SEP 3	10 ECTS	

3.4 4th semester:

Content

GBE-M:

ME DYN 1 (Dynamics)
ME ENB M 2 (Electronics, Thermodynamics)
LANG 2 (German/French/Spanish/Danish)
FCM 1 (Financial Management)
INO 1 (Innovation)
SEP 4 (Semester project)

GBE-ICT:

IT LRL 1 (Lego Robot Lab)
IT RWD 1 (Responsive Web Design 1)
LANG 2 (German/French/Spanish/Danish)
FCM 1 (Financial Management)
INO 1 (Innovation)
SEP 4 (Semester project)

Learning goals

Knowledge

Skills

Competencies

Exams

ME DYN 1 (GBE-M)	5 ECTS	
ME ENB M 2 (GBE-M)	5 ECTS	
IT LRL 1 (GBE-ICT)	5 ECTS	Oral
IT RWD 1 (GBE-ICT)	5 ECTS	Written
LANG 2	5 ECTS	
FCM 1	5 ECTS	
INO 1	5 ECTS	Passed/not passed
SEP 4	5 ECTS	

3.5 5th semester:

Content

GBE-M:

ME TEM 1 (Technology)
ME MTR 1 (Material Science)
ME TDE 1 (Construction)
LANG 3 (German/French/Spanish/Danish)
SEP 5 (Semester project)

GBE-ICT:

IT SWE 1 (Software Engineering 1)
IT SDJ 2 (Software Development with Java 2)
LANG 3 (German/French/Spanish/Danish)
SEP 5 (Semester project)

Learning goals

Knowledge

Skills

Competencies

Exams

ME TEM 1 (GBE-M)	5 ECTS	
ME MTR 1 (GBE-M)	5 ECTS	
ME TDE 1 (GBE-M)	5 ECTS	
IT SWE 1 (GBE-ICT)	5 ECTS	
IT SDJ2 (GBE-ICT)	10 ECTS	Oral
LANG 3	5 ECTS	
SEP 5	10 ECTS	

3.6 6th semester: Study Abroad

Content

GBE-M:

ME MEC 2 (Mechanics)
ME MED 1
ME TER 1 (Thermodynamics)

GBE-ICT:

IT DBS 1 (Database Systems 1)
IT CON 1 (Computer Networks 1)
IT CAL 1 (Computer Architecture 1)

Learning goals

Knowledge

Skills**Competencies****Exams**

ME MEC 2 (GBE-M)	5 ECTS	
ME MED 1 (GBE-M)	5 ECTS	
ME TER 1 (GBE-M)	5 ECTS	
IT DBS 1 (GBE-ICT)	5 ECTS	
IT CON 1 (GBE-ICT)	5 ECTS	
IT CAL 1(GBE-ICT)	5 ECTS	

3.7 7th semester:**Content**GBE-M:

ME MDI 1

ME ELE 1

MST 1 (Management and Strategy)

SEP 7 (Semester project)

GBE-ICT:

IT DNP 1 (.NET Programming 1)

IT AND 1 (Android Programming 1)

MST 1 (Management and Strategy)

SEP 7 (Semester project)

Learning goals**Knowledge****Skills****Competencies****Exams**

ME MDI 1 (GBE-M)	5 ECTS	
ME ELE 1 (GBE-M)	5 ECTS	
IT DNP 1 (GBE-ICT)	5 ECTS	
IT AND 1(GBE-ICT)	5 ECTS	
MST 1	5 ECTS	
SEP 7	15 ECTS	

3.8 8th semester: Internship

For further details, read section 4.

3.9 9th semester: Bachelor project

For further details on the bachelor project, read section 6.

Content

GBE-M:

BPR 1 (Bachelor project)

GBE-ICT:

BPR 1 (Bachelor project)

Learning goals

Knowledge

Skills

Competencies

Exams

BPR 1	20 ECTS	Written and oral
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4 Internship

The internship comprises a semester of 30 ECTS and is placed on the 8th semester of the programme. The internship period is either paid or unpaid and takes place either in a private or in a public company in Denmark or abroad.

The purpose of the internship is for the student to acquire insight into practical engineering equivalent to the work of an engineering assistant, combined with the integrated application of the concepts, methods and techniques of the applied disciplines acquired in the first seven semesters.

The following prerequisites must be met before an internship can commence:

- All courses on the first 4 semesters must be passed / approved
- Workshops must be passed / approved or credited

The student is responsible for finding an internship, which must be approved by VIA, who will appoint a supervisor to the intern.

The student prepares a plan for the internship programme with a corresponding assignment formulation, in cooperation with the company.

The basis for the assessment of internship is a continuous report from the student to VIA, a feedback from the internship company, as well as a presentation where the supervisor can ask detailed questions about the internship content.

If the internship is interrupted before the end of the internship period, the supervisor must, in consultation with the head of programme, assess whether the internship has had a duration and content sufficient for passing the internship.

The internship is assessed pass / fail.

5 Elective courses

The GBE programme comprises 25 elective ECTS-points:

6th semester	
Elective M/ICT	5 ECTS
Elective	5 ECTS
Elective	5 ECTS
9th semester	
Elective	5 ECTS
Elective	5 ECTS

6 Bachelor Project

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 a test.

The Bachelor project must demonstrate individual self-critical reflection within the chosen subject, and must document the student's ability to apply engineering theories and methods. In addition, the bachelor project must reflect the student's ability to express himself/herself professionally and structured within his/her subject.

The conditions for starting the bachelor project are that the student has passed all courses in the 1st - 6th semester (or courses totaling 180 ECTS, including the 30 ECTS internship).

The Bachelor project is prepared in groups of 2 or 3 persons.

The Bachelor project comprises an independent experimental, empirical and / or theoretical examination of a practical problem formulation related to the core subjects of the programme.

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

The students are examined in the project by an oral test / group test with individual assessment according to the learning objectives described under "3.1 Compulsory courses and projects". The basis for the exam is the bachelor project. It is a prerequisite for participation in the exam that the bachelor project is handed in within the stipulated deadline, and meets the project requirements described.

The examination may take place at the earliest when all the other tests of the programme, including internship test, have been passed. The examination is assessed on the 7-point scale and with the participation of external examiner.

7 Title and issue of diploma

Graduates who have completed the studies under this curriculum is entitled to use the title Diploma engineer with 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 project. 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.

Appendix 1 (for students enrolled in 2017)

For students enrolled in the GBE-program in 2017, the below structure is followed, due to the fact that the MAT B-admission requirement is introduced in 2018:

GBE-M:						
Semester	Course	Course	Course	Course/ project	Project	
9th semester	Elective	Elective	BPR 2 Bachelor project			
8th semester	Internship					
7th semester	ME MDI 1	ME ELE 1	MST Management & Strategy	SPE 7 Semester project		
6th semester Study Abroad	ME MEC 2 Mechanics	ME MED 1	ME TER 1 Thermo- dynamics	Elective	Elective	Elective
5th semester	ME TEM 1 Technological Processes and Environment	ME MTR 1 Materials Science	ME TDE 1 Technical Design	GER 3/ FRE 3/ SPA 3/ DAN 3	SEP 5 Semester project	
4th semester	ME DYN 1 Dynamics	ENB M 2 Electrical Engineering, Thermo- dynamics	GER 2/ FRE 2/ SPA 2/ DAN 2	FCM Financial Management	INO 1 Cross disciplinary innovation	SEP 4 Semester project
3rd semester	ME MEC 1 Statics	MAT 3 Mathematics 3	GER 1/ FRE 1/ SPA 1/ DAN 1	BUE Business Economics	IBC Intercultural Business Communicati on	SEP 3 Semester project
2nd semester	ENB M 1 Introduction to M- engineering	MAT 2 Mathematics 2		GBC 2 Global Business Communication 2	MAM 2 Global Marketing Management	SEP 2 Semester project
1st semester	ENB ICT 1 Introduction to ICT- engineering	MAT 1 Mathematics 1	GBC 1 Global Business Communica- tion 1	MAM 1 Marketing Management	SSE 1 Study skills for engineers	SEP 1 Semester project

GBE-ICT:						
Semester	Course	Course	Course	Course/ project	Project	
9th semester	Elective	Elective	BPR 2 Bachelor project			
8th semester	Internship					
7th semester	IT DNP 1 .NET programming	IT AND 1 Android programming	MST Management & Strategy	SPE 7 Semester project		
6th semester Study Abroad	IT CON 1 Computer networks	IT CAL 1 Computer architecture	IT WEE 1 Web engineering	Elective	Elective	Elective
5th semester	IT SWE 1 Software engineering	IT SDJ 2 Software development with Java 2		GER 3/ FRE 3/ SPA 3/ DAN 3	SEP 5 Semester project	
4th semester	IT DBS 1 Database systems 1	IT RWD 1 Responsive web design	GER 2/ FRE 2/ SPA 2/ DAN 2	FCM Financial Management	INO 1 Cross disciplinary innovation	SEP 4 Semester project
3rd semester	IT SDJ 1 Software development with Java 1		GER 1/ FRE 1/ SPA 1/ DAN 1	BUE Business economics	IBC Intercultural Business Communication	SEP 3 Semester project
2nd semester	ENB M 1 Introduction to M- engineering	MAT 2 Mathematics 2		GBC 2 Global Business Communication 2	MAM 2 Global Marketing Management	SEP 2 Semester project
1st semester	ENB ICT 1 Introduction to ICT- engineering	MAT 1 Mathematics 1	GBC 1 Global Business Communication 1	MAM 1 Marketing Management 1	SSE 1 Study skills for engineers	SEP 1 Semester project