



CURRICULUM
for the
Bachelor's Degree Programme in Product
Development and Integrative Technology

Revised 31 July 2018

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This national part of the curriculum for the Bachelor's Degree Programme in Product Development and Integrative Technology has been issued pursuant to section 18 (1) of the Ministerial Order on Technical and Commercial Academy Profession Programmes and Professional Bachelor Programmes. This curriculum is supplemented by the institution-specific part of the curriculum, which is laid down by the individual institution offering the programme.

The curriculum has been prepared by the educational network for the Bachelor's Degree Programme in Product Development and Integrative Technology and approved by the board of directors of all the institutions offering the programme - or by their rectors subject to authorisation - and following consultations with the institutions' education committees and the chairmanship of co-examiners for the programme.

1.0 Curriculum framework

The following current acts and ministerial orders apply to the programme:

Danish (Consolidated) Act on Academies of Professional Higher Education

Danish (Consolidated) Act on Academy Profession Programmes and Professional Bachelor Programmes

Ministerial Order on Technical and Commercial Academy Profession Programmes and Professional Bachelor Programmes.

Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes

Ministerial Order on Admission to and Enrolment on Academy Profession Programmes and Professional Bachelor Programmes (the Admissions Order)

Ministerial Order on the Grading Scale and Other Forms of Assessment of Study Programmes offered under the Ministry of Higher Education and Science.

1.1 Effective date

This national part of the curriculum takes effect on 1 August 2018 and applies to students enrolled on the programme after 1 June 2018; however, exams initiated before 1 August 2018 may be concluded under the previous curriculum until 1 February 2019.

1.2 Transitional arrangements

Students who started their studies in the spring of 2018 or previous will complete the studies in accordance with the curriculum in force at the time of enrolment.

1.3 The programme's intended learning outcome:

The intended learning outcomes include the knowledge, skills and competencies that a student in Product Development and Integrative Technology must achieve during the bachelor's degree programme.

Knowledge

The graduate has acquired:

- development-based knowledge of theory and practice in product development and integrative technology based on a technological concept encompassing the following elements: techniques, knowledge, organisation and product.
- an understanding of practice and key theories and methods in relation to the relevant theory of science and ethical issues in product development and integrative technology.
- an ability to reflect on practice and the application of key theories and methods of the profession based on their own qualifications with a special focus on the environment, safety and sustainability.

Skills

The graduate is able to

- assess practice-oriented and theoretical issues as well as justify and select relevant methods and tools for product development, construction and technical planning as well as integrative technology.
- master methods for the development of products and complex technical solutions in their own profession.
- assess practise-oriented and theoretical issues in relation to energy, the environment, ethics and sustainability - specifically and practically - for the development of products and technical solutions as well as justify and select relevant solutions.
- use relevant knowledge from research and development in product development and integrative technology.
- communicate practise-oriented and professional issues and solutions to customers, partners, as well as internally in the company.

Competencies

The graduate is able to

- manage complex product development, construction and technical planning relying on knowledge of the development of the product or service, its manufacturing process, use, disposal or discontinuation.
- independently engage in academic and interdisciplinary collaboration with internal and external business partners and customers and assume responsibility within the framework of a professional code of ethics for the development process.
- identify their own learning requirements and develop their own knowledge, skills and competencies in relation to the profession.

1.4 Learning objectives for the individual specialisations

The programme consists of three specialisations: (10 ECTS, regardless of specialisation)

- 1) IT and Electronics
- 2) Installation and Automation

3) Products and Production

1.4.1. Additional learning objectives for the IT and Electronics specialisation:

Knowledge

The graduate has acquired:

- development-based knowledge of environmental aspects and sustainability in electronics, data construction and network project planning.
- an understanding of practice, specific methods and theories for the development of IT and network solutions, electronic and computerised systems as well as an ability to reflect on practice and the application of theories and methods.

Skills

The graduate is able to

- apply methods and tools within complex IT and network solutions and electronic and computerised systems and master further development and adaptation of solutions.
- assess practice-oriented and theoretical issues as well as justify and select relevant solutions to ensure sustainability in the choice of technology and materials.
- communicate practice-oriented and professional issues and solutions to partners and users.

Competencies

The graduate is able to

- handle innovative, complex and development-oriented solutions for the design and application of IT solutions in an industrial context.
- independently engage in academic and interdisciplinary collaboration with other professional groups on complex IT and network solutions as well as electronic and computerised systems to be integrated in interdisciplinary projects and assume responsibility within the framework of a code of professional ethics.
- identify their own learning requirements and develop their own knowledge, skills and competencies - academically, methodically and across disciplines - in the area of complex IT and network solutions as well as electronic and computerised systems in relation to the development of interdisciplinary technical solutions.

1.4.2 Additional learning objectives for the Installation and automation specialisation:

Knowledge

The graduate has acquired:

- development-based knowledge of environmental aspects and sustainability in complex construction and industrial installations, as well as optimisation and operation of automatic systems.
- an understanding of practice, discipline-specific methods and theories of development in complex construction and industrial installations, as well as optimisation and operation of automatic systems, and an ability to reflect on practice and the application of theories and methods.

Skills

The graduate is able to

- apply methods and tools for the optimisation of complex construction and industrial installations and operation of automatic systems and master the further development and adaptation of solutions.
- assess practice-oriented and theoretical issues as well as justify and select relevant solutions to ensure sustainability in the choice of technology and materials.
- communicate practice-oriented and professional issues and solutions to partners and users.

Competencies

The graduate is able to

- handle innovative, complex and development-oriented solutions for the design and application of automated solutions in an industrial context.
- independently engage in academic and interdisciplinary collaboration with other professional groups for the optimisation of complex construction and industrial installations and operation of automatic systems and assume responsibility within the framework of a code of professional ethics.
- identify their own learning requirements and develop their own knowledge, skills and competencies - academically, methodically and across disciplines - in construction and industrial installation optimisation and operation of automatic systems in the development of interdisciplinary technical solutions.

1.4.3 Additional learning objectives for the Products and productions specialisation:

Knowledge

The graduate has acquired:

- development-based knowledge of environmental aspects and sustainability in relation to the company's business and production.
- an understanding of practice, discipline-specific methods and theories of development and planning applied in the design and construction of industrial products as well as optimisation,

operation and integration of production systems, and an ability to reflect on practice and the application of theories and methods.

Skills

The graduate is able to

- apply methods and tools for the design and construction of industrial products and optimisation and operation of production systems and master the further development and adaptation of solutions.
- assess practice-oriented and theoretical issues as well as justify and select relevant solutions to ensure sustainability in the choice of technology and materials.
- communicate practice-oriented and professional issues and solutions to partners and users.

Competencies

The graduate is able to

- handle innovative, complex and development-oriented design solutions and apply technological solutions in an industrial context.
- independently engage in academic and interdisciplinary collaboration with other professional groups on the design of industrial products and optimisation and operation of production systems to be integrated in interdisciplinary projects and assume responsibility within the framework of a code of professional ethics.
- identify their own learning requirements and develop their own knowledge, skills and competencies - academically, methodically and across disciplines - in the areas of design and construction of industrial products and optimisation and operation of production systems in relation to the development of interdisciplinary technical solutions.

2.0 Admission

Admission to the programme is in accordance with the rules of the admission order.

2.1 Academic criteria for the selection of candidates on the top-up degree programmes

Students starting in August 2019:

If, due to reasons of capacity, there are more applicants than will be enrolled on the programme, the following criteria (in order of preference) will apply:

- Average grade of the qualifying education
- The applicant's previous relevant experience

Students starting in August 2021:

Applicants seeking admission to start studying in August 2021 will have to pass an admission test. Admission will be based on the result of the admission test. The test and the procedure are described in detail at www.kea.dk.

3.0 National and local programme elements

3.1 Sequencing of programme elements, internship and exams

PTI programme overview					
Fifth semester	Theoretical Product development			Professional and sustainable product development	
	(20 ECTS – 10 ECTS from Product development and 10 ECTS from Integrative technology)			(10 ECTS – 5 ECTS from Innovation and industrial design, 5 ECTS from Construction and sustainability as well as the specialisations)	
Sixth semester	Integrated product development and industrial design	Electives	Electives	Electives	Electives
	10 ECTS 5 ECTS from Product development and 5 ECTS from Integrative technology	(5 ECTS)	(5 ECTS)	(5 ECTS)	(5 ECTS)
Seventh semester	Internship		Bachelor exam project		
	15 ECTS		15 ECTS		

Table 1: PDIT programme overview

3.2 National programme elements

3.2.1 Integrative technology

Content

Essential to the programme element is an understanding of the concept of technology, research in new technologies and how to apply them - in a commercial context that will allow students to work with integration, exploitation and implementation of technology and concepts in a cross-organisational perspective. The programme element also includes methods and tools for consultative purposes as well as management of interdisciplinary development activities.

Learning objectives for Integrative technology:

Knowledge

The student has acquired:

- (3) development-based knowledge of essential practical and theoretical aspects of product and system integration as well as management, planning and evaluation tools in the field of the environment, including environmental management, environmental management systems and philosophies of sustainability.
- (1) an understanding of practice, applied theories and methods for product development and innovation in relation to a company's organisation, and an ability to reflect on how they are used in a commercial context.

Skills

The student is able to

- (3) apply methods and tools for the identification and analysis of important technological aspects pertaining to the relation between a product's design, production and use as well as master the assessment of significant practical and theoretical aspects of the integration of products and systems including the relations between technology, technique, knowledge and organisation(s).
- (1) assess practice-oriented and theoretical issues in the implementation processes associated with the use of new technologies across the organisation and identify their strengths and weaknesses as well as justify and select relevant solutions.
- (1) communicate practice-oriented and academic issues and solutions to business partners and users, including the application of relevant IT tools in the preparation and presentation of projects, concepts and solutions.

Competencies

The student is able to

- (1) handle aspects of complex product and technology development, including modification of products and systems.
- (3) independently engage in academic and interdisciplinary collaboration for the purpose of implementing technologies and concepts and assume responsibility within the framework of a professional code of ethics, including management of technical development projects.
- (3) identify their own learning requirements and develop their own knowledge, skills and competencies in relation to the development, implementation and management of the integration of technologies.

Number of ECTS points

The programme element Integrative Technology is worth 15 ECTS points.

3.2.2 Product development

Content

This programme element covers product development and process optimisation from a business perspective and how to identify and involve experts and users in the development and optimisation processes. Focus is on interdisciplinary cooperation and on how to identify, collect, process and further develop data in a product and process development context.

Learning objectives for Product development

Knowledge

The student has acquired:

- (1) development-based knowledge of the practical as well as the theoretical and methodological structure of technological project work.
- (1) an understanding of practice, theories and methodology applied to the product development processes – including the project's financial impact during production/construction and operation, and an ability to reflect on how they are used in a commercial context.

Skills

The student is able to

- (3) apply methods and tools for the identification and collection of relevant company data so as to contribute to the development and optimisation of processes across the organisation, and master planning of the development work, testing of the product/ the solution (proof of concept) and identify the quality of technological project work compared to the results, validity, reliability, and relevance.
- (1) assess practice-oriented and theoretical issues relative to the significance and use of concepts in relation to the development of specialist language and technology as well as justify and select relevant concepts.
- (1) communicate practice-oriented and academic issues and solutions to peers, users and partners viewed from a business context, including environmental and sustainability considerations in product development.

Competencies

The student is able to

- (1) handle commercial and technologically appropriate product development and create a project design for technological project work based on the choice, analysis and definition of a problem.
- (3) independently engage in academic and interdisciplinary collaboration across the organisation for the purpose of implementing product development and assume responsibility within the framework of a professional code of ethics.

- (3) identify their own learning requirements and develop their own knowledge, skills and competencies in relation to product development.

Number of ECTS points

The programme element Product Development is worth 15 ECTS points.

3.2.3 Construction and sustainability

Content

This programme element covers construction and dimensioning based on students' qualifying education and specialisation. Sustainability is included in relation to the specialisation and the programme's focus on product development and integrative technology.

Learning objectives for Construction and sustainability

Knowledge

The student has acquired:

- (2) development-based knowledge of practice and applied theory and methods in environmental management, environmental management systems and philosophies of sustainability.
- (2) an understanding of practice, applied theories and methods in construction and product development specific to the specialisation and an ability to reflect on how environmental and sustainability aspects may impact a company's business.

Skills

The student is able to

- (2) apply process automation methods and master process optimisation methods specific to the specialisation.
- (2) assess practice-oriented and theoretical issues relating to the construction of solutions as well as justify and select relevant models for the construction of complex solutions based on sustainable technologies.
- (1) communicate practise-oriented and academic issues and solutions to partners and users.

Competencies

The student is able to

- (3) handle the construction of complex and development-oriented solutions specific to the specialisation.
- (3) independently engage in academic and interdisciplinary collaboration to optimise existing solutions in an industrial context and assume responsibility within the framework of a professional code of ethics.

- (3) identify their own learning requirements and develop their own specialisation-specific knowledge, skills and competencies in relation to construction and sustainability.

Number of ECTS points

The programme element Construction and Sustainability is worth 5 ECTS points

3.2.4 Innovation and Industrial Design

Content

The programme element focuses on innovation in general and systematic innovation in product development and process optimisation based on an understanding of the relevant industry and its conditions.

Learning objectives for Innovation and industrial design

Knowledge

The student has acquired:

- (2) development-based knowledge of practice and applied theories and methods in technological solutions relevant to the industry in question.
- (1) understanding of the practice, philosophy, theory and methodology when technology is applied in an industrial context and is able to reflect on alternative uses and related ethical issues.

Skills

The student is able to

- (2) apply methods for the optimisation of existing solutions specific to the specialisation and master methods for the application of technologies in the solutions specific to the specialisation.
- (2) assess practice-oriented and theoretical issues relating to innovation and design in specific solutions as well as justify and select relevant methods for the design of solutions.
- (1) communicate practise-oriented and academic models and solutions to industrial partners and users.

Competencies

The student is able to

- (3) handle innovative methods for solutions to complex and development-oriented industrial situations specific to the specialisation.
- (3) independently engage in academic and interdisciplinary collaboration for the design of new, innovative solutions in an industrial context and assume responsibility within the framework of a professional code of ethics.

- (3) identify their own learning requirements and develop their own specialisation-specific knowledge, skills and competencies in relation to innovation and industrial design.

Number of ECTS points

The programme element Innovation and Industrial Design is worth 5 ECTS points.

3.2.5 Number of exams in the national programme elements

The national programme elements include 3 exams. In addition to this, one bachelor project exam is held with an external co-examiner.

For the number of internship exams, see section 3.5.

For a comprehensive overview of all the exams in the programme, please refer to section 5 of the curriculum, as exams in the national and local programme elements may be held at the same time.

Where the learning objectives are followed by a number, for instance (1), the number refers to the type of exam conducted at KEA. The number refers to the project. See 5.1.2 of a comprehensive overview of exams, their organisation and requirements.

3.3 Local programme elements

The local programme elements are offered as electives at KEA.

3.4 Electives

Electives are taught in the sixth semester. For a detailed description of the electives, ECTS points, learning objectives and number of exams, please refer to the electives catalogue.

3.5 Internship

Learning objectives for the internship

Knowledge

The student has acquired:

- development-based knowledge of product development and integrative technology as applied in the company in question.
- an understanding of practice, theories and methodology applied in the company in terms of its financial and organisational conditions, its products and markets, and an ability to reflect on the company's use of innovation, product development and technology as well as sustainability.

Skills

The student is able to

- apply methods and tools for the planning of systematic development tasks in the company, including interdisciplinary process elements, and master the management of these tasks
- assess practice-oriented and theoretical issues in product development, optimisation and integration of technology as well as justify and select relevant theoretical and analytical working methods associated with development within the profession.
- communicate practise-oriented and professional issues and solutions to partners, the company and users.

Competencies

The student is able to

- manage complex and development-oriented situations in the company in question.
- independently engage in academic and interdisciplinary collaboration and assume responsibility within the framework of a professional code of ethics.
- identify their own learning requirements and develop their own knowledge, skills and competencies in relation to the profession and the requirements of the company in question.

Number of ECTS points

The internship is worth 15 ECTS points.

Number of exams

The internship concludes with an exam with an external examiner.

3.6 Rules for the completion of the internship

KEA offers five types of internship

1. Workplace experience
2. Project-oriented internship
3. Virtual internship
4. Entrepreneurial internship
5. International internship

1. Workplace experience involves the student being physically located in the company as a natural part of daily life. The student takes part in the daily work and/or work on agreed projects.
2. Project-oriented internships are based on a project clearly defined by the student and a company. Although the resolution of this issue is done in close cooperation with the company, the student will not be physically present at the workplace every day. A timetable

for the project and a plan for ongoing meetings between the student and the company will be agreed beforehand. This type of internship is rarely approved by KEA.

3. Virtual internships are based on a project clearly defined by the student and a company. Unlike project-oriented internship, where the students and the company meet face to face, communication takes place through digital media. In addition to the project itself, the students also are expected to focus on the virtual form of communication. Part of the learning is that the student learns how to communicate virtually in a professional and reflective way. This type of internship is rarely approved by KEA.
4. The starting point for the entrepreneurial internship is that the student has a relevant and practical business idea, centred around a product or concept that could potentially develop into a profitable business. Focus is on how to professionalise the business idea through dialogues with relevant stakeholders and user groups and to integrate the collected feedback in product or concept development. The students are expected to find at least a relevant, external contact who may act as a mentor. This type of internship is rarely approved by KEA.
5. This involves an internship at a company located outside Denmark.

Internship contracts are handled by KEA's Internship Coordinator, the programme's head of internship and the supervisor/teacher. It is the supervisor/teacher who visits the internship company to discuss the relevant final projects with them and the intern.

It is for KEA to assess whether the student's specific plan for the internship is relevant in relation to the programme, that is whether it can be approved or not.

Approval of the internship contact

It is the person in charge of internships at the PTI programme, possibly in consultation with the teacher/supervisor, who assesses whether the company and the work assignments are relevant in relation to programme and the student profile. Relevant internship assignments and completion of the contract are discussed regularly with the other teachers so as to establish a common understanding of the area. The Head of Programme and KEA's Internship Coordinator may also be drawn upon.

Work assignments:

To enable the person in charge of internships at PDTI to assess the relevance of the internship, the work assignments that the student and the company agree on must be written in the internship contract.

The student and the company agree on the daily work assignments. If questions arise, they may confer with the person in charge of the internship at PDTI.

Work assignments must be described as precisely as possible using full sentences.

Learning objectives

Based on the work assignments agreed with the company, the student must set up a number of individual learning objectives. In addition to the student taking part in the company's daily tasks and being taught by the supervisor and others at the internship company, the educational institution will give the student some assignments to complete, and then the student will take the internship exam.

3.6.1 Approval of internship company

Formal requirements for the internship company

Work assignments:

An internship company must be able to give the student relevant work assignments for most of the time. Work assignments are expected to fall within the areas that a graduate would work with.

Contact

A contact must be assigned at the company whom the intern can talk to throughout the internship.

Professional discussion and feedback

The internship is a learning process, and therefore the company must offer the student continuous professional discussion and feedback. As a rule, the company should have at least one person employed who was trained in the programme area in question or who has acquired competencies similar to those of the programme through other training or years of experience.

Working conditions

The internship company must be able to offer the intern physical and psychological work conditions similar to those of their other employees.

Working time

Working time is 37 hours per week within normal working hours. The company and an intern may, however, agree that some of the working hours are at night or at the weekend.

Company size

The company is expected to have at least two employees and an independent business address. The internship supervisor may dispense with this if the company satisfies the other five requirements.

3.7 Teaching and learning methods

The bachelor's degree programme in product development and integrative technology applies a wide range of teaching and learning methods including:

- Classroom teaching

- Group work
- Case-based exercises
- Games and role play
- Company field trips
- Interdisciplinary project-oriented teaching
- Problem-based learning
- Interdisciplinary knowledge sharing
- Student presentations
- Cooperative learning
- Digital learning technologies and learning environments
- Workshops
- Independent study

Teaching and learning methods are adapted to the individual programme elements in order to facilitate the development of student's knowledge, skills and competencies. At the same time, the intension is to establish a foundation which will allow the students to continue in qualifying continuing education.

Teaching and learning methods emphasise a professional presence in the programme through a mix of teaching and practical experience. Teaching at the academy is a mix of theory and practical exercises.

The extent of the teaching corresponds to a full-time study programme.

3.8 Differentiated teaching

Not relevant for this programme.

4.0 Internationalisation

Education abroad

Students may choose to complete parts of their studies abroad, for instance the internship or electives, on the condition that these programme elements are at the same or at a higher level in terms of the qualifications framework than that of their current programme.

Successfully completed programme elements are equivalent to the corresponding programme elements at other educational institutions offering the programme.

Students are obliged to provide information on completed programme elements from other Danish or foreign higher education programmes and on any employment for which credit transfer may be granted. On a case-by-case basis or by recourse to the rules of the curriculum, KEA approves credit transfers based on completed programme elements and job experience comparable to subjects, programme elements and internships. The decision is based on an academic evaluation.

In case of pre-approval of a period of study in Denmark or abroad, the student is obliged, after completing the period of study, to document the programme elements completed during the approved period of study. Upon obtaining the pre-approval, the student must consent to the institution requesting the necessary information after the student has completed the period of study.

KEA's centre for international coordination assists in planning stays abroad:

<http://www.kea.dk/en/contact/kea-global/>

4.2 Agreements with foreign educational institutions on parallel courses

At present there are no agreements on collaborations or parallel courses with foreign educational institutions.

5.0 Exams in the programme

5.1 Programme exams

5.1.1 Exam forms

The exam form depends on the professional content of the programme element being examined, and KEA strives to achieve variation in exam forms to reflect the contents of the teaching contents and working methods.

5.1.2 Mandatory activities - attendance and submission

A crucial part of this study programme's justification is the integration part – that is acquiring competencies to integrate technical skills in interaction with others. This is the so-called integrator role. This is one of the reasons why this programme is based on group work, and in order to get a good outcome, students must necessarily take part in this group work. Therefore, we recommend that students participate in the teaching and submit and present the assignments and projects involved.

Exam forms based on the assessment of written work require the written part should be submitted on time and satisfy all the formal requirements for the exam. If not, the student cannot take the exam until the requirements have been satisfied, and the student will have used one exam attempt.

Attendance at plenary days is mandatory.

Plenary days (applies to fifth and sixth semester)

Up to six of the teaching days may be plenary days when each group will give presentations to the entire class. All groups must give their presentations in accordance with a plan prepared by the teacher. All groups are expected to participate actively with professional feedback to all other groups during the entire teaching day. Presentation time will be based on the size of the group. At the end of the day, the teacher gives each group some concluding remarks.

The plenary days are mandatory activities for students in the fifth and sixth semester and related to project exams 2 and 3. Plenary days are scheduled. In order to take the exams in question, each student cannot be absent from more than one of the planned plenary days of a semester.

Exams with prerequisites

Theoretical product development fifth semester – project 1
<p>Theoretical product development completes with an oral project exam.</p>
<p>Prerequisites</p> <p>The fifth-semester element “Theoretical product development” constitutes the assessment criteria for the exam and must be submitted on time in accordance with the exam plan which can be found on the intranet and satisfy all the formal requirements listed below.</p> <p>Non-compliance with formal requirements, or late submission of the written project, which constitutes the written part of the exam, means that the student cannot take the exam, and they will have used one exam attempt.</p>
<p>Formal requirements</p> <p>The project report must, as a minimum, contain:</p> <ul style="list-style-type: none">• Front page including a title, student photo, name, number of characters and an indication of whether or not it can be published.• A solemn declaration, table of contents and a list of abbreviations• Introduction/statement making it explicit how the assignment relates to product development and integrative technology• Problem statement with additional questions• Theory and method• Analyses and discussions• Solutions, including digital and/or physical models from trials/mock-up to final proof of product• Financial and construction-related impact analyses• Conclusion• Perspective• Bibliography, index of figures and illustrations (including all sources referenced in the project)• Appendices (only appendices essential to the report)• The project report must make up 6 to 9 standard pages• A summary of no more than 1 standard page including pictures of the final solution must be submitted separately. The pictures are not included in the one standard page. <p>A standard page is 2,400 characters including spaces and footnotes. Bibliography and appendices are not included. Appendices in the form of drawings, diagrams and the like will not be assessed.</p>
<p>Exam organisation</p> <p>The exam is an internal individual oral exam based on a writing project and assessed according to the Danish 7-point grading scale.</p> <p>Group work is <u>not</u> allowed.</p>

<p>The exam is worth 20 ECTS. Students are awarded one aggregate grade as an overall assessment of the written and the oral performance. The student has 5 min. max. to present the project. Then the student will be examined. 20 minutes are set aside for each student including deliberation and breaks between students.</p>
<p>Assessment criteria</p> <p>The assessment criteria for the exam are equivalent to the learning objectives marked (1) in the national learning objectives for Integrative technology and Product development. The learning objectives appear from sections 3.2.1 and 3.2.2 of the curriculum.</p>
<p>Sequencing</p> <p>Submission of assignments is in accordance with the exam schedule.</p>
<p>Exam language</p> <p>See section 5.9.</p>

<p>Professional and sustainable product development fifth semester – project 2</p> <p>Technical product development and design completes with an oral project exam.</p>
<p>Prerequisites</p> <p>“Professional product development and design project” of the first semester constitutes as assessment criteria for the exam and must be submitted on time in accordance with the exam plan which can be found on the intranet and satisfy all the formal requirements listed below.</p> <p>Non-compliance with formal requirements, or late submission of the written project, which constitutes the written part of the exam, means that the student cannot take the exam, and they will have used one exam attempt.</p> <p>Participation in the plenary days, see section 5.1.2.</p>
<p>Formal requirements</p> <p>The project report must, as a minimum, contain:</p> <ul style="list-style-type: none"> • Front page including a title, student photos, name, number of characters and an indication of whether or not it can be published. • A solemn declaration, table of contents and a list of abbreviations • Introduction/statement making it explicit how the assignment relates to product development and integrative technology • Problem statement with additional questions • Theory and method • Analyses and discussions • Solutions, including digital and/or physical models from trials/mock-up to final proof of product

- Financial and construction-related impact analyses
- Conclusion
- Perspective
- Bibliography, index of figures and illustrations (including all sources referenced in the project)
- Appendices (only appendices essential to the report)
- A summary of no more than 3 standard pages with pictures of the final solution must be submitted separately. The pictures are not included in the three standard pages.

The length of the report for groups of

- 2: 4-18 pages (33,600-43,200 characters)
- 3 to 4: 16-20 pages (38,400-48,000 characters)
- 5: 16-22 pages (38,400-52,800 characters)

A standard page is 2,400 characters including spaces and footnotes. Bibliography and appendices are not included. Appendices in the form of drawings, diagrams and the like will not be assessed.

Exam organisation

The exam is an internal individual oral exam based on a written group project and assessed according to the Danish 7-point grading scale.

The recommended group size is 3-4 students.

The exam is worth 10 ECTS points.

Students are awarded one aggregate grade as an overall assessment of the written and the oral performance.

The project is presented individually. Each team member has 5 minutes max. to give their presentation followed by examination. 30 minutes are set aside for each examinee including deliberation, grading and a break.

Assessment criteria

The assessment criteria for the exam are equivalent to the learning objectives for the specialisations and the relevant national programme elements.

The learning objectives appear from the national part of the curriculum, sections 1.4 (1.4.1, 1.4.2 and 1.4.3) and, if followed by (2), from 3.2.3 Construction and sustainability and 3.2.4 Innovation and industrial design.

Sequencing

The exam takes place at the end of the fifth semester. Detailed information on time and place and submission of the written group project will be published on the intranet.

Exam language

See section 5.9.

Integrated product development and industrial design sixth semester – project 3

Interdisciplinary product development and design completes with an oral project exam.

Prerequisites

The sixth semester's "Interdisciplinary product development and design project", constitutes the assessment criteria for the exam and must be submitted on time in accordance with the exam plan which can be found on the intranet and satisfy all the formal requirements listed below.

Non-compliance with the formal requirements, or late submission of the written project, which constitutes the written part of the exam, means that the student cannot take the exam, and they will have used one exam attempt.

Participation in the plenary days, see section 5.1.2.

Formal requirements

The project report must, as a minimum, contain:

- Front page including a title, student photos, name, number of characters and an indication of whether or not it can be published.
- A solemn declaration, table of contents and a list of abbreviations
- Introduction/statement making it explicit how the assignment relates to product development and integrative technology
- Problem statement with additional questions
- Theory and method
- Analyses and discussions
- Solutions, including digital and/or physical models from trials/mock-up to final proof of product
- Financial and construction-related impact analyses
- Conclusion
- Perspective
- Bibliography, index of figures and illustrations (including all sources referenced in the project)
- Appendices (only appendices essential to the report)
- A summary of no more than 3 standard pages with pictures of the final solution must be submitted separately. The pictures are not included in the three standard pages.

The length of the report for groups of

- 2: 14-18 pages (33,600-43,200 characters)
- 3 to 4: 16-20 pages (38,400-48,000 characters)
- 5: 16-22 pages (38,400-52,800 characters)

A standard page is 2,400 characters including spaces and footnotes. Bibliography and appendices are not included. Appendices in the form of drawings, diagrams and the like will not be assessed.

Exam organisation

The exam is an internal individual oral exam based on a written group project and assessed according to the Danish 7-point grading scale.

The recommended group size is 3-4 students.

The exam is worth 10 ECTS points.

Students are awarded one aggregate grade as an overall assessment of the written and the oral performance.

The project is presented individually. Each team member has 5 minutes max. to give their presentation followed by examination. 30 minutes are set aside for each examinee including deliberation, grading and a break between students.

Assessment criteria

The assessment criteria for the exam are equivalent to learning objectives marked with the figure (3) in the national learning objectives for Technical integration and Product development.

The learning objectives appear from the curriculum, sections 3.2.1 and 3.2.1.

Sequencing

The exam takes place in the sixth semester. Detailed information on time and place and submission of the written group project will be published on the school's intranet, Fronter.

Exam language

See section 5.9.

Internship exam, seventh semester

During the internships, students work with academically relevant issues within the core areas of the programme and obtains knowledge of relevant business functions.

Based on the learning objectives for the internship, cf. section 3.5, the student and the supervisor/contact will jointly establish working assignments for the internship period which will then determine the planning of the student's work during the internship period.

The purpose of the internship exam is to demonstrate the extent to which the student has met the learning objectives set up for the internship. See section 3.5.

The internship period is considered a full-time job with the demands on working time, efforts, commitment and flexibility which a graduate in product development is likely to encounter in their first job.

Prerequisites

The following requirements apply for the exam:

The internship report, which constitutes the assessment criterion for the exams must have been submitted on time in accordance with the exam schedule which can be found on the intranet. It must meet the formal requirements listed below.

Non-compliance with formal requirements, or late submission of the written report, means that the student cannot take the exam, and they will have used one exam attempt.

Formal requirements

The report must document the main results of the internship period. The report may be accompanied by pictures and videos.

A short description of the company as well as a statement from the company's internship supervisor as documentation for the internship and the tasks performed must be appended.

The report must be between 8 to 12 standard pages. Pictures and/or a 10-minute edited video (max.) and 1GB data volume may be appended to the report.

A standard page is 2,400 characters including spaces and footnotes. Bibliography and appendices are not included. Appendices in the form of drawings, diagrams and the like will not be assessed.

Exam organisation

The exam is an external, individual oral exam assessed according to the Danish 7-point grading scale.

Students are awarded one aggregate grade as an overall assessment of the written and the oral performance.

The oral exam will be based on the submitted report and appendices, if any. The student is not supposed to present its report. Instead the examiner and possibly the co-examiner will ask questions in relation to the contents of the report. 25 minutes have been set aside for each examinee, of which 10 minutes are meant for deliberation and grading.

The exam is worth 15 ECTS.

Assessment criteria

The assessment criteria for the exam are equivalent to the learning objectives set up for the internship. See section 3.5.

Sequencing

The exam takes place immediately after the end of the internship period as specified by KEA. Detailed information on time and place, as well as submission of the internship report will be published on the intranet.

5.1.3 Exam organisation

See section 5.1.2 for a comprehensive overview of exams, their organisation and requirements.

Requirements

It applies to all exams that the written material must be submitted on time and satisfy the current rules and formal requirements. If not, the exam will not take place, and the student will have used one exam attempt.

Grading

It applies to all exams, with the exception of a possible commencement of studies exam, that the student is awarded one grade according to the Danish 7-point grading scale.

For exams with one aggregate grade, an average will be calculated and rounded up/down. However, the grade of 02 cannot be attained by rounding up. In other words, the average must be higher than 02.

Fifth semester	
Theoretical product development	<ul style="list-style-type: none"> • Internal, individual oral exam based on an individual written project. • The student is awarded one aggregate grade as an overall assessment of the written and the oral performance. • The student will have 5 minutes to present the project followed by the examination. • 20 minutes per examinee including deliberation and grading.
Professional and sustainable product development	<ul style="list-style-type: none"> • Internal, individual oral exam based on a written group project. • The student is awarded one aggregate grade as an overall assessment of the written and the oral performance. • The student will have 5 minutes to present the project followed by the examination. • 30 minutes per examinee including deliberation and grading.
Sixth semester	
Integrated product development and industrial design	<ul style="list-style-type: none"> • Internal, individual oral exam based on a written group project. • The student is awarded one aggregate grade as an overall assessment of the written and the oral performance. • The student will have 5 minutes to present the project followed by the examination. • 30 minutes per examinee including deliberation and grading.
Electives	<ul style="list-style-type: none"> • See the electives catalogue for the organisation of the exam.
Seventh semester	
Internship	<ul style="list-style-type: none"> • External, individual written exam (internship report). • The grade is based on the written report.
Bachelor project	<ul style="list-style-type: none"> • External individual oral exam based on written project prepared individually or in groups. • The student is awarded one aggregate grade for the project and their oral performance according to the Danish 7-point grading scale. • A maximum of 15 minutes has been set aside for the individual student presentation(s) followed by an individual examination. 45 minutes per examinee including deliberation, grading and a break between students.

Table 2: Exam organisation

5.1.4 Exams with an external co-examiner

Sequencing	Exams	ECTS
Seventh semester	Internship	15
Seventh semester	Bachelor exam project	15
A total of		30

Table 3: Exams with an external co-examiner

5.2 Programme exams and their placement

See the relevant section.

5.3 First-year exam

Not relevant for the product development and integrative technology programme.

5.4 Requirements for written assignments and projects

See section 5.1.

5.5 Requirements for the bachelor project

The learning objectives for the bachelor project are identical to the learning objectives for the programme listed under section 1.3.

The bachelor project must document the student's understanding of and ability to reflect on the practice of the profession as well as their application of theories and methods in relation to a practice-oriented problem. The identified problem, which must be central to the programme and the profession, is formulated by the student, possibly in cooperation with a private or public company. The institution approves the problem definition.

The project, which constitutes the written part of the exam, must contain:

The project, which constitutes the written part of the exam, must contain:

- Front page and title
- Table of contents
- Introduction, inc. presentation of the problem, problem statement and approaches.
- Background, theory, methodology, analysis, including a description and justification of the choice of any empirical data in reply to the problem statement.
- Conclusion
- Perspective

- Bibliography (including all sources referenced in the project)
- Appendices

The final exam project must make up between 20 and 30 standard pages. For each additional student who participates in the final exam project, 10-20 standard pages will be added.

Group size	Minimum	Maximum
One student	20 pages	30 pages
Two students	30 pages	40 pages
Three students	40 pages	50 pages

Front page, table of contents, bibliography and appendices are not included in the required number of pages. Appendices will not be assessed.

A standard page is 2,400 characters including spaces and footnotes. Front page, table of contents, bibliography and appendices are not included. Appendices will not be assessed.

Bachelor's project exam

The exam project in the final semester concludes the programme when all other exams have been passed.

Number of ECTS points

The final exam project is worth 15 ECTS points.

Exam form

The exam consists of an oral and a written exam with an external co-examiner. Students are awarded an individual overall grade according to the 7-point grading scale for the written project and the oral performance.

5.5.1 The importance of spelling and writing skills

The assessment of the bachelor project includes not only the academic content but also the student's writing and spelling in a communicative context. The student's writing skills are weighted 10%, whereas the academic content is weighted 90%.

Spelling and writing skills may be disregarded by KEA upon the student's documentation of a relevant specific impairment.

Spelling and writing skills may be included in the assessment of other exams.

5.6 Use of materials and aids

All materials and aids, including electronic aids, are allowed unless otherwise stated in the individual exam. KEA may restrict the access to electronic devices for reasons of capacity.

5.7 Special exam conditions

Examinees with physical or mental impairments and examinees with corresponding difficulties may be granted specific exam conditions where this is necessary to give equal status to other examinees in the exam situation. Special examination conditions must, however, not change the standard of the exam.

An application for the granting of special exam conditions must be in writing and submitted to the head of programme no later than one month before the exam is to be held. Documentation of impairment must be attached to the application. As a rule, extra time at the exam means 25% extra time for the exam and the preparation.

5.8 Make-up exams

Students who have been prevented from taking an examination due to a documented illness or another unforeseen circumstance will be given the opportunity to take a new exam as soon as possible. If the exam is in the final exam period of the programme, the student must be allowed to take the exam in the same period or in continuation of this period. The re-examination may be the same as the next regular exam. The student is responsible for finding out when the sick and re-exams take place.

If several individual parts of an exam are to be graded separately, the student can only take an exam in the part(s) not yet completed. This also applies to exams where the individual grades are aggregated in one single grade.

Illness must be documented by a medical certificate and KEA must have received the medical certificate three working days after the exam at the latest. If the illness is not documented, the student will have used an examination attempt.

5.9 Examination language

Programmes or single subjects offered in English must be examined in English. If a student would like to take an exam in a different language, a written application must be submitted to the Head of Programme no later than 2 months before the exam is to be held, and there must be very good reasons for wanting this.

5.10 Commencement of studies exam

A commencement of study exam will be held no later than two months after the commencement of study. The exam is an academic exam of moderate complexity based on key elements of the teaching from the first two months of the programme. The commencement of studies exam aims to clarify whether the student has actually started on the programme. The commencement of studies exam is assessed as pass/fail.

This written exam is assessed as pass/fail. The exam is passed if 80% of their answers are correct.

Students who fail the exam at the first attempt must pass a re-exam within three months after the commencement of study. Students who pass neither the exam nor the re-exam will be disenrolled from the programme. This exam does not fall within the scope of Chapter 10 of the examinations order, which means that the student cannot complain about the assessment.

5.11 Use of own and others' written work (plagiarism)

Projects and other material in connection with exams must be drawn up by the students themselves. If students unlawfully use other people's work as their own (plagiarism) or use their own previously assessed work without references, they will be expelled from the exam.

Students may also be expelled after the exam.

Expulsion from an exam due to cheating means that any grade already awarded will be withdrawn, and the student will have used one exam attempt.

For information about plagiarism, see www.stopplagiat.nu

5.12 Exam cheating and disruptive behaviour during exams

Cheating at exams will be submitted in accordance with the rules set out in the Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes (the Examination Order). Students who cheat at an exam will be expelled from the exam.

If cheating occurs under aggravating circumstances, the student may be expelled from the programme for a shorter or longer period. With expulsion for cheating under aggravated circumstances, a written warning will be given stating that repetition could lead to permanent expulsion from the programme.

Cheating includes:

- Obtaining unlawful help during the exam
- Providing unlawful help to other students during the exam

- Using other people's work as one's own (plagiarism – see www.stopplagiat.nu), see also section 5.15
- Using own previously assessed work without references, see also section 5.15
- Using materials and aids not permitted for the exam in question

Expulsion from an exam due to cheating means that the awarded grade will be withdrawn, and the student will have used one exam attempt.

If students exhibit **disruptive behaviour** during an exam, KEA may expel them from the exam.

In less serious cases, the institution will give the student a warning.

6.0 Other rules governing the programme

6.1 Rules on compulsory attendance

Mentor days (applies to fifth and sixth semester)

Up to ten mentor days may be distributed evenly over the fifth and sixth semester in the form of individual sessions with the teacher who has been appointed mentor once every three or four weeks.

The mentor must keep encouraging the student to find ‘the right internship’ and develop the student’s professional skills so as to match any special requirements of a given internship company. The sessions require that the student should contact internship companies and organisations with a view to seeking an internship in accordance with a predetermined plan agreed with the mentor. In addition, the student will often have to do some independent study of relevant materials, such as technical books, participation in relevant seminars, use of social media, etc.

The sessions are considered a parameter for assessment of student activity for students in the fifth and sixth semester.

Mentor days are scheduled. To be considered an active student, a student is only allowed to be absent from one of the mentor days, and they must document and at each session, they must document that the agreed activities have been implemented.

6.2 Credit transfer rules

Successfully completed programme elements are equivalent to the corresponding programme elements at other educational institutions offering the programme.

Students are obliged to provide information on completed programme elements from other Danish or foreign higher education programmes and on any employment for which credit transfer may be granted.

On a case-by-case basis, the educational institution approves credit transfers based on completed programme elements and job experience comparable to subjects, programme elements and internships.

The decision is based on an academic evaluation.

In case of pre-approval of a period of study in Denmark or abroad, the student is obliged, after completing the period of study, to document the programme elements completed during the approved period of study.

Upon obtaining the pre-approval, the student must consent to the institution requesting the necessary information after the student has completed the period of study.

If a credit transfer is granted as described above, programme elements are deemed to have been completed if they have been passed in accordance with the rules applicable to the programme in question.

6.3 Credit transfer of subjects covered by the common part of the curriculum

no existing credit transfer agreements.

6.4 Credit transfer of subjects covered by the institution-specific part of the curriculum

There are no existing credit transfer agreements.

6.5 Criteria for the assessment of active enrolment

The student must take part in student activities, mandatory projects and exams in accordance with the way the programme has been described in this curriculum and in current laws and regulations. KEA evaluates active enrolment on an ongoing basis.

Attendance, in particularly in relation to mentor days and plenary days as described above, will form part of the assessment of active enrolment.

Students who cannot participate in mandatory projects, exams or mentor and plenary days due to documented illness or other acceptable reasons, must immediately contact the programme administration.

The Administration will inform the student about the necessary procedures, including the provision of a medical certificate. The student must pay all the costs.

The student is required to keep up to date via their KEA mail and information on Fronter. All study-relevant communication is via these platforms.

6.6 Disenrolment due to insufficient active enrolment

Enrolment to the programme may be discontinued for students who have not passed at least one exam within a continuous period of at least 1 year, cf. the rules laid down in the chapter 10 of the Ministerial Order on Admission to and Enrolment on Academy Profession Programmes and Professional Bachelor Programmes.

6.7 Exemption rules

KEA may, due to exceptional circumstances, grant exemptions from the rules in this curriculum laid down solely by KEA or together with the educational institution offering the programme.

KEA may, due to exceptional circumstances, grant exemptions from rules in this curriculum laid down solely by KEA or together with the educational institution offering the programme.

6.8 Complaints

Complaints regarding exams will be handled in accordance with the rules set out in Parts 10 of the Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes (the Examination Order).

When should a complaint be submitted? Complaints relating to examinations and grading must be submitted within two weeks of the assessment (grade) being announced.

How should a complaint be submitted? Complaints must be submitted individually and in writing to KEA at kvalitet@kea.dk stating the reasons for the complaint. Complaints submitted jointly by several students may be rejected.

What may the complaint concern? A complaint may concern the basis for examination, the examination process or the assessment (grade).

What may the complaint result in? If a student complaint is successful, they will be offered a new assessment (for written exams) or a re-exam (for oral exam). A grade *cannot* be changed administratively. A grade will only be changed if the new examiners award a different grade according to their professional assessment. The new grade may be higher or lower than the original grade.

Who handles the complaint? Complaints are normally handled by KEA Kvalitet. This does not, however, apply to complaints concerning the basis for examination if the exam is organised by the Danish Agency for Higher Education.

In such cases, the complaint is forwarded to the Danish Agency for Higher Education together with KEA's opinion.