Amendment to the institutional part of the curriculum with commencement date as of 01.08.2018, for the Bachelor in Product Development and Integrative Technology (because of the Corona-situation)

amendment as of 20 April 2020 by head of programme Anne Dorthe Lønborg Sørensen.

Effective date
This amendment sheet for the institutional part of the curriculum applies to students enrolled to this exam from March to June 2020, as the exams has been converted due to the special circumstances due to the Corona-situation this spring.

Possible reexaminations may differ from the ordinary exam form. Information about the exam form for the reexamination will be given immediately after automatically being signed up for the reexam.

Changes to the institutional part
The changes concern section *3.4 Integration of technology, 2. semester – 15 ECTS* with changes to the exam form and organisation for the 2nd element of the exam (this means that there are no changes to 1st element concerning the continuous assessment activities).

The changes relate to the exam form as the oral part of the exam is cancelled.

Original wording:

3.4 Integration of technology, 2. semester – 15 ECTS

Learning objectives for the exam
The learning objectives for the exam are identical with the learning objectives for the two national subject elements on the 2nd semester. The learning objectives can be found below. Information in brackets behind each learning objective indicates which subject element the learning objectives come from.

Knowledge
The student will gain knowledge about:

- essential practical and theoretical aspects of integration in connection with products and systems as well as management, planning and evaluation tools in the environmental field, including environmental management, environmental management systems and sustainability philosophies *(Integrative Technology, part 2)*
- and an understanding of the practice, applied theory and methods for product development and innovation seen in the context of the company's organisations and systems, and will be able to reflect on how they are used in a business context *(Integrative Technology part 2)*
- the practical and theoretical methodological structure of a technological project work *(Product development part 2)*

- and an understanding of the practice, theory and methods for product development processes in all of its phases – including the project's economic impact both during manufacture/construction and operation and will able to reflect on how they are can be used in a business context. *(Product development part 2)*

Skills

The student will get the skills to:

- apply methods and tools for the identification and analysis of important technological issues relating to the connection between a product's construction, manufacture and use, and must master assessing significant practical and theoretical aspects of the integration of products and systems, including the relationships between technology, technique, knowledge and organisation(s) *(Integrative Technology, part 2)*
- apply methods and tools for the identification and collection of a company's data basis and based on this, contribute to the development and optimisation of processes across the organisation and must master the planning of development work, testing of the product/the solution (proof of concept) and identify the quality of technological project work in relation to the results, validity, reliability and relevance *(Product development part 2)*
- communicate practice-orientated and professional issues as well as solutions to peers, users and partners in a business context, including environmental and sustainability considerations regarding product development. *(Product development part 2)*

Competencies

The student will learn to:

- independently engage in academic and interdisciplinary cooperation across the organisation and prevailing disciplines with a view to implementing technologies and concepts and assuming responsibility within the framework of professional ethics, including leading and managing technical development projects *(Integrative Technology, part 2)*
- identify their own learning needs and develop their own knowledge, skills and competencies in relation to the development, implementation and management of the integration of technologies *(Integrative Technology, part 2)*
- manage both commercial and technologically appropriate product development and create a project design for technological project work on the basis of selection, analysis and a delimitation of a problem statement *(Product development part 2)*
- independently engage in academic and interdisciplinary cooperation across the organisation and prevailing disciplines with a view to implementing product development and assuming responsibility within the framework of professional ethics *(Product development part 2)*

The exam form and organization including any formal requirements

The exam includes two elements: An individual oral examination based on a group project and a series of continuous assessment activities throughout the semester. The actual exam and the continuous assessment activities will be evaluated separately. Together the two elements are the exam for Integration of technology.

1st element: The continues assessment activities

The two continuous assessment activities consist of a series of activities spread over the 2nd semester. For each individual continuous assessment activity, points will be awarded, which at the end of the 2nd semester will be converted to a mark which is weighted 30% of the mark for exam.

The two assessment activities are described below:

Assessment activities	**Time placement / frequency**	**Credits**	**Assessment**
A. Attendance at teaching activities	Continuously on the 2nd semester	20% of the points	Participation in the daily quiz or attendance registration in Canvas
B. Task solution	Continuously on the 2nd semester	80% of the points	The tasks compiled with points in Canvas and when handed-in. An overview and a schedule will be available on Canvas at the beginning of the semester

Point scale	**Marks for continuous assessment activities**	**Procentage points**
	12	94-100%
	10	85-93%
	7	75-84%
	4	60-74%
	02	50-59%
	00	11-49%
	-3	0-10%

The activities happen throughout the semester, if the students have documented absence due to sickness, maternity/paternity leave etc, active participation will be assessed in relation to the actual participation. With undocumented absence or lack of participation, students will be given the lowest score.

The weighted average mark for the continuous assessment activities is indicated on the diploma as continuous assessment in Integration of technology.

2nd element: Exam

The individual oral exam is based on a group project. The group project is prepared in groups of max 4 students, and the project must include a poster, a prototype as well as a video presentation of the prototype and the poster.

The oral exam:

1. Group presentation based on a project. Max 20 minutes per group regardless of group size
2. Individual examination for 25 minutes based on a project:
   a. The student presents important aspects of their individual parts of the project. This includes their role and what they have learnt from the project (about 10 minutes).
   b. The student answers the questions, which are based on the project, the project's presentation and the semester's curriculum (approx. 10 min).
3. Deliberation and communication of marks: 5 minutes.

The group presentation can be replaced by a video, this must not be more than 10 minutes long.

Formal requirements for the group project

The group project must include a poster, a prototype as well as a video presentation of the prototype and the poster.

Poster

A poster must be handed-in, which is part of the written part of the exam. The poster must be visually clear, contain images, illustrations and text. It must be possible for professionals with the same background as the students to understand the poster without needing a presentation. The poster must be in A1 format (print version) and must be handed-in as a PDF in WISEflow (see deadlines on Study Update). It must be possible to visualise the poster in virtual reality.

Prototype and video presentation

There must be a prototype, which, together with the poster will be presented to potential users. This presentation must be documented by a video, which is also handed-in via WISEflow immediately before the exam (see deadlines on Study Update). The prototype can either be presented as a physical product or as an illustration through the use of simulation tools. The prototype must not be handed-in but must be presented in connection with the group presentation.

Prerequisites for the exam – active attendance and submission requirements

The following requirements must be met to take the oral part of the exam:

- The written project, is the basis for the exam and the assessment thereof and must:
  - fulfil the formal requirements (see above) and
  - be handed-in on time, in accordance with the exam schedule, which is available on Study Update

It is a prerequisite for taking the oral exam that students confirm their responsibility for the preparation of the project with their signature, this is done when the project is uploaded in WISEflow.

Non-compliance with one or more of these conditions means that the student cannot participate in the exam, and one exam attempt will have been used.

Criteria for assessment and co-examiner

The evaluation criteria for the exam are identical to the learning objectives for the subset product development and the subset Technical Integration. The precise learning objectives for the exam are described above. One overall mark is given, where the actual exam is weighted 70% and the continuous assessment activities are weighted 30% of the overall mark for Integration of technology.

At the oral exam, one mark is awarded based on an overall assessment of the student's written and the oral presentation.

The diploma will indicate an overall mark for the continuous assessment activities, the mark for the oral exam and an overall mark for the exam Integration of technology.

When calculating the weighted average of the continuous assessment activities and the exam, the mark will be rounded up if it is halfway between two marks on the marking scale. There will be no rounding if the overall mark is under 02.

The exam is assessed according to the 7-point scale and has an external co- examiner.

Completion of the exam

If a student fails the exam, the student must do a re-exam in the actual exam. A new written product or prototype or a video must not be prepared. The mark for the continuous assessment activities will be transferred for the re-exam regardless of whether the continuous assessment activities have been passed or failed, i.e. it doesn't matter whether the overall assessment is above or below 02. For further information, read the section about completion of exams.

Changes to:

3.4 Integration of technology, 2. semester – 15 ECTS

Learning objectives for the exam

The learning objectives for the exam are identical with the learning objectives for the two national subject elements on the 2nd semester. The learning objectives can be found below. Information in brackets behind each learning objective indicates which subject element the learning objectives come from.

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The student will gain knowledge about:

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The student will get the skills to:

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Competencies
The student will learn to:

- independently engage in academic and interdisciplinary cooperation across the organisation and prevailing disciplines with a view to implementing technologies and concepts and assuming responsibility within the framework of professional ethics, including leading and managing technical development projects *(Integrative Technology, part 2)*
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- manage both commercial and technologically appropriate product development and create a project design for technological project work on the basis of selection, analysis and a delimitation of a problem statement *(Product development part 2)*
- independently engage in academic and interdisciplinary cooperation across the organisation and prevailing disciplines with a view to implementing product development and assuming responsibility within the framework of professional ethics *(Product development part 2)*

The exam form and organization including any formal requirements

The exam includes two elements: A written exam based on either a group project or an individual project and a series of continuous assessment activities throughout the semester. The actual exam and the continuous assessment activities will be evaluated separately. Together the two elements are the exam for Integration of technology.

1st element: The continues assessment activities

The two continuous assessment activities consist of a series of activities spread over the 2nd semester. For each individual continuous assessment activity, points will be awarded, which at the end of the 2nd semester will be converted to a mark which is weighted 30% of the mark for exam.

The two assessment activities are described below:

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	-3	0-10%

The activities happen throughout the semester, if the students have documented absence due to sickness, maternity/paternity leave etc., active participation will be assessed in relation to the actual participation. With undocumented absence or lack of participation, students will be given the lowest score.

The weighted average mark for the continuous assessment activities is indicated on the diploma as continuous assessment in Integration of technology.

2nd element: Exam

The exam is a written exam is based on an individual or group project. The project consists of:

- A report
- A prototype (virtual or physical)
- A product presentation video

Formal requirements

The report:

- Must have the following length: 10 normal pages plus 5 normal pages per person (1 normal page = 2400 characters w/spaces). This does not include: Front page, table of contents, bibliography, and appendices. Maximum deviation +/-10%.
- Must be written in Times New Roman, size 12 with 1,5 spacing, margins of 3cm on all sides
- Must contain a front page with
    - Names of the authors
    - Date of hand-in
    - Education and institution
    - Character count
- Must contain a table of contents including appendices
- Must contain page numbers
- Can be written in both English and Danish
- **NB: If there are multiple authors, the report must contain a secondary front page in which it is written which authors are responsible for which sections of the report.** This also does not count as part of the characters used in the report. All sections of the report must be covered except for introduction, discussion, and conclusion.

The report should as a minimum contain the following sections:

Introduction

Introduces the project, the solution and provides a general overview of the report

Process

Describes the process including:

Your use and combination of design methods e.g.

- design sprint
- methods for understanding user needs or empathising with users
- methods for ideation
- methods for mapping
- prototyping

Your use and combination of project management methods e.g.

- Time estimation
- Cost estimation
- Risk analysis

Product

Describes and reflects on the product including:

- the business model and value proposition
- the product breakdown, incl. cost of production of 10.000 pieces
- the basic network architecture
- the interaction design including
    - decisions about types of interaction
    - use of data and presentation hereof
- reflections on responsibility (e.g. security, privacy, social engineering, and sustainability)

In addition, you can also describe, analyse, and reflect on:

- the market for your product
- handling of common challenges pertaining to IoT design
- service design and service ecology
- the setup design for primary users
- scalability of the UX design
- automation and control

Discussion

Sums up the main conclusions of the report and discusses the viability of the developed prototype.

The prototype

The prototype should be either virtual or physical and it should be made for the purpose of testing key assumptions or explore problems which arise during the design process. The prototype is not to be handed-in but is shown in the presentation video.

The product presentation video

In this video the students present their product in a 3-minute video. The video must consist of an introduction to the problem, the product, and its primary users
In the video it should be argued why this is a good solution. Arguments could include statements about:

- how this product/service benefits the users (e.g. with reference to costs, security, ease of use, ease of installation or functionality)
- how this product/service benefits stakeholders (e.g. with reference to costs or market positioning)

Prerequisites for the exam – active attendance and submission requirements
The following requirements must be met to take part of the exam:

- The written project, the prototype and the video, is the basis for the exam and the assessment thereof and must:
  - fulfil the formal requirements (see above) and
  - be handed-in on time, in accordance with the exam schedule, which is available on Study Update

It is a prerequisite for taking part in the exam that students confirm their responsibility for the preparation of the project with their signature, this is done when the project is uploaded in WISEflow. Non-compliance with one or more of these conditions means that the student cannot participate in the exam, and one exam attempt will have been used.

Criteria for assessment and co-examiner
The evaluation criteria for the exam are identical to the learning objectives for the subset product development and the subset Technical Integration. The precise learning objectives for the exam are described above. One overall mark is given, where the actual exam is weighted 70% and the continuous assessment activities are weighted 30% of the overall mark for Integration of technology.

At the written exam, one mark is awarded based on an overall assessment of the students individual contribution to the project report, the overall assessment of the prototype and the video presentation. The diploma will indicate an overall mark for the continuous assessment activities, the mark for the oral exam and an overall mark for the exam Integration of technology.
When calculating the weighted average of the continuous assessment activities and the exam, the mark will be rounded up if it is halfway between two marks on the marking scale. There will be no rounding if the overall mark is under 02.
The exam is assessed according to the 7-point scale and has an external co- examiner.

Completion of the exam
If a student fails the exam, the student must prepare a new written report and a new video presentation. The prototype – if examiner and co-examiner approves it - can be reused or further developed. The mark for the continuous assessment activities will be transferred for the re-exam regardless of whether the continuous assessment activities have been passed or failed, i.e. it doesn't matter whether the overall assessment is above or below 02. For further information, read the section about completion of exams.