Curric- ulum

AP in Computer Science

2019-2020

Ulla Skaarup, Rector

The curriculums of Zealand are divided in a national part and a local (institutional) part. In addition, some curriculums are supplemented with an elective course catalogue. All parts are to be found below.

The individual institution stipulates the local part of the curriculum. The national part of the curriculum is adopted by the programme's educational network, and the institutions listed below– each of them offers the study programme – have been involved in the preparation of this curriculum:

Copenhagen Business Academy
Business Academy Dania
Business Academy of Mid Jutland
Business Academy Aarhus
Copenhagen School of Design and Technology
UCL University College Lillebaelt
University College of Northern Denmark
Zealand – Academy of Technologies and Business

In addition to the curriculums, all study programmes have an educational appendix attached, which is part of the primary ministerial order on technical and mercantile academy profession programmes and professional bachelor programmes (Danish title: Hovedbekendtgørelsen om tekniske og merkantile erhvervsakademiuddannelser og professionsbacheloruddannelser), see www.retsinfo.dk.

CURRICULUM

for

AP in Computer Science

Effective from 1 August 2019

Revised 18/03/2019

Contents

The national part of the curriculum for the Academy Profession degree programmes in Computer Science (AP in Computer Science) has been issued pursuant to section 18(1) of the Executive Order on Admission to Technical and Vocational Academy Profession and Professional Bachelor Degree Programmes. This curriculum is supplemented by the institution specific part of the curriculum as laid down by the institution offering the degree programme.

The curriculum has been developed by the educational network for the Academy Profession degree programmes in Computer Science (AP in Computer Science) and has been approved by the boards – or the directors by authorisation – of the institutions offering the programme and in consultation with the education committees of the institutions and the chairmanship for external examiners of the programme.

1. The objectives of the programme in relation to learning achieved

Knowledge

The graduate has:
- development based knowledge about applied practice, theory and method in relation to software development and of relevance to the profession
- understanding of fundamental company operations in relation to software development
- understanding of the technological concepts and the technological platform of computer systems in relation to programming, error tracing and commissioning.

Skills

The graduate is be able to:
- apply key approaches and tools characteristic of this discipline to methodically identify requirements to IT systems, comprising assessment of whether the requirements are feasible within the set framework
- apply up-to-date programming techniques and tools for software building, including ensure the quality of the developed product, as is relevant for the profession
- present the work carried out and communicate problems and solutions with a practical bias in a form that renders the documentation useful for partners and users
- apply relevant knowledge in connection with systems development, programming and commissioning
- apply the skills associated with professional practice to systematically perform error tracing and error repairs in connection with IT systems
- assess practice-related problems in relation to computer systems and select solution options.

Competencies

The graduate is be able to:
- manage a process for development of a system applying up-to-date methods, techniques and tools
- participate in a technical and multidisciplinary collaborative effort and project work developing software with a professional approach and participate in the development of the practical aspects of software development
- in a structured context acquire new knowledge, skills and competencies in relation to the IT industry, including domain knowledge and technological knowledge and application of new methods, techniques and tools.

2. The programme comprises the following seven national programme elements:

The programme comprises the following seven national programme elements with a total weight of 90 ECTS credits.

2.1. Programming

Contents

This programme element is dedicated to design and programming of IT systems. The course will focus on high quality IT systems programming in a tier architecture with user interface, functionality and database. The solutions will be built employing tools and technique employed by the profession with an emphasis of good programming design and development of systems of a high standard.

Learning objectives for Programming

Knowledge
The graduate has:

- development based knowledge about the specification of abstract data types and program quality criteria
- understanding of abstraction mechanisms in modern programming languages

Skills

The graduate will be able to:

- apply key methods to specify and create algorithms and assess the qualitative and quantitative properties of algorithms and data structures
- use key facilities in the programming language to realise algorithms, design patterns, abstract data types, data structures, design models and user interfaces
- use an integrated development tool extensively used by the profession, including a version control system and key software components/libraries, to design and build applications with a practical bias based on a tier architecture
- apply key methods and technologies to realise models in a database system and build programs that use a database interface
- apply key methods and technologies to design and build programs in the form of interrelated processes/threads
- apply key technologies and tools to perform tests and quality controls and to produce documentation in accordance with current professional standards.

Competencies
The graduate can:

- manage development focused situations in the context of programming
- be part of development and maintenance projects as a professional programmer

- acquire new knowledge, skills and competencies in a structured context of relevance to programming languages, development tools, programming techniques and program design.

ECTS credits

The Programming course totals 30 ECTS credits.

2.2. Systems Development

Contents

This programme element is dedicated to standard techniques and methods used for analysis of a problem and design of a system. The course employs widely used diagramming techniques and tools for modelling of the functionality and contents of database dependent systems. The course will focus on developing user-friendly, flexible and easily understandable basic system with simple user interfaces. The course also comprises techniques used for planning and implementation of quality assurance, such as review and testing.

Learning objectives for Systems Development

Knowledge
The graduate has:

- development based knowledge about the importance of quality criteria for the systems development process and the final system design
- understanding of the importance of experimenting as part of or as supplement to the systems development method

Skills
The graduate can:

- apply key techniques and tools specific for this discipline for modelling of IT systems at the level of analysis and design
- apply the techniques and tools of the profession to plan and perform tests and quality control
- apply principles and techniques of relevance to the profession to design user interfaces
- assess quality criteria and select and use an appropriate software architecture
- assess problems with a practical bias drawing on users and use appropriate patterns for the modelling process
- communicate the process and product resulting from the systems development process to relevant stakeholder, including ensuring traceability.

Competencies
The graduate can:

- manage development focused situations using systems development methods and relevant techniques
- participate in a competent manner in technical and multidisciplinary systems development projects.

ECTS credits

The Systems Development course totals 15 ECTS credits.

2.3. Technology

Contents

This programme element is dedicated to the technological aspects and problems of systems development and programming of IT systems. The course will focus on database systems and operative systems.

Knowledge
The graduate has:

- development based knowledge about up-to-date operative systems and database systems, including their structure and facilities
- understanding of the theory and practice of concurrency problems

Skills
The graduate can:

- apply key methods and tools to synchronise processes and threads
- apply key facilities in database systems and operative systems in an appropriate manner

Competencies
The graduate can:

- acquire new knowledge about and skills in relation to new operative systems and database systems in a structured context

ECTS credits

The Technology course totals 5 ECTS credits.

2.4. Understanding Business

Contents

This programme element is dedicated to business understanding in general and creating value in a business. The course addresses the relationship between commerce and information technology. The course focuses on how a systems development organisation addresses the aspects of development, improvement and integration of information systems and information technology.

Learning objectives for Understanding Business

Knowledge
The graduate has:

- development knowledge about how information systems and information technology can improve business processes and develop the business
- development knowledge about IT implementation and change management
- understanding of strategic problems in relation to IT investments and IT security
- understanding of the human interaction in a company

Skills
The graduate can:

- apply innovative methods focused on project work in practice-related development projects
- apply key methods to communicate internally and externally
- assess business processes with a practical bias based on key analysis methods

Competencies
The graduate can:

- manage the relationship between the design of business processes and the design of IT systems
- participate in project work and work with the stakeholders of IT projects with a professional approach
- acquire new knowledge, skills and competencies about new technology in a structured context from a professional perspective

ECTS credits

The Understanding Business course totals 10 ECTS credits.

2.5. Programming 2

Contents

This programme element is dedicated to design, programming and realisation of distributed software systems. The course focuses on frontend and backend programming as well as the underlying communication.

Learning objectives for Programming 2

Knowledge
The graduate has:

- development based knowledge about the integration of heterogeneous components and platforms
- understanding of the theory and practice of distributed programming

Skills
The graduate can:

- apply key techniques to design and build programs with several concurrent users based on collaborative processes in a distributed architecture
- apply design patterns for distributed software architecture to build programs that use up-to-date network technologies
- apply key methods and tools to develop software components and web applications
- assess the qualitative consequences of a proposed solution

Competencies
The graduate can:

- work as a professional programmer in integration projects
- participate actively in major programming projects
- acquire new knowledge, skills and competencies of relevance to programming languages, development tools, programming techniques and program design in a structured context

ECTS credits

The Programming course totals 10 ECTS credits.

2.6. Technology 2

Contents

This course is dedicated to technological problems and aspects within the context of networks, distributed systems and security. The course focuses on the use of the aspects mentioned within systems development, programming and operation.

Learning objectives for Technology 2

Knowledge
The graduate has:

- development based knowledge about practical problems and key applied theory within the context of designing and realising distributed systems
- understanding of basic network concepts.

Skills
The graduate will be able to:

- apply key tools for virtualisation purposes
- apply key application protocols used in practice
- assess problems with a practical bias relating to key security-related concepts and threats
- assess relevant technological aspects when developing distributed systems

Competencies
The graduate can:

- select an infrastructure in connection with the development of distributed systems
- acquire new knowledge about and skills in relation to distributed systems in a structured context

ECTS credits

The Technology course totals 10 ECTS credits.

2.7. Systems Development 2

Contents

This programme element is dedicated to the quality of products and processes. The course looks at how to ensure the proper quality using systems development methods and processes selected for and adapted to the situation. The course works with methods for pre-feasibility studies and agile methods used in the development of various types of systems, including distributed systems.

Learning objectives for Systems Development 2

Knowledge
The graduate has:
- development based knowledge about systems development methods and the importance of processes to the quality of products and processes

Skills
The graduate can:

- apply a chosen systems development method and use it in a systematic manner for a project with a practical bias
- apply key principles for the development of project plans and evaluate and adjust these in an appropriate manner
- assess problems with a practical bias and select a process model and a systems development method that fits the situation
- communicate the systems development process and the resulting product to partners and users.

Competencies
The graduate can:

- adapt systems development methods and processes according to the situation in a specific project with a practical bias
- participate in a competent manner in technical and multidisciplinary systems development projects using adapted methods
- acquire new knowledge about process models and systems development methods in a structured context

The compulsory programme element concludes with an exam.

ECTS credits

The Systems Development course totals 10 ECTS credits.

2.3. Number of exams for the national programme elements

In the first year of studies, the national programme elements total 60 ECTS credits, of which a minimum of 60 ECTS credits are included in the exam for the first year exam.

In addition to this, the other national programme elements comprise one exam and an additional exam in the Final Exam Project. For information about the number of internship exams, see section 3.

For a total list of all exams under the degree programme, please see the institution-specific part of the curriculum, since the students can sit exams in the national programme elements specified in this curriculum together with the programme elements specified for the institutions-specific part of the curriculum.

3. Internship

Learning objectives for the internship

The internship is organised so that it – when combined with the other parts of the degree programme – helps the student develop practical competencies. The objective of the internship is to enable the student to apply the methods, theories and tools taught by the programme and thereby address specific practical assignments within the scope of information technology.

Learning objectives for the internship

Knowledge
The graduate has:

- knowledge about and understanding of the day-to-day operation of the internship company, especially in relation to the tasks carried out during the internship.

Skills
The graduate can:

- apply a variety of the technical and analytical approaches associated with employment within this industry
- assess practice-related problems and propose solutions
- communicate practice-related problems and state reasons for the proposed solution(s).

Competencies
The graduate can:

- manage development-oriented practical and professional situations as encountered in the industry
- structure and plan typical day-to-day tasks of relevance to the profession
- participate in professional and interdisciplinary cooperation with a professional approach.
- acquire new knowledge, skills and competencies relevant to the profession

ECTS credits

The internship totals 15 ECTS credits.

Number of exams

The internship is rounded off with an exam. Further details about the format and organisation of the exam etc. can be found in the institution-specific part of the curriculum.

4. What is required for the Final Exam Project

The learning objectives of the Main Exam Project are identical to the learning objectives of the degree programme (see item 1 above).

The objective of the Main Exam Project is to document the student's understanding of practice and key theories and methods in relation to a practice-related problem based on a specific assignment within the subject matter covered by the programme. The problem to be addressed must be a key issue within the degree programme and the profession and the student must formulate it, if relevant jointly with a private or a public company. The problem is subject to the institution's approval.

What is required for the Final Exam Project

The student must submit a project report, and if applicable a product.

The project report constitutes the written part of this exam. As a minimum this report must comprise:

- Cover page with title
- Table of contents
- Introduction and problem statement
- Methodology
- Analysis
- Proposed solution(s), if applicable
- Conclusion
- References (including all sources referred to in the project)
- Appendices (only appendices of key importance to the report will be accepted)

Project reports written by a single student may total 40 standard pages as a maximum; reports written by several students may total an additional 20 standard pages per student.

Cover page, table of contents, references and appendices are not included in the required number of pages. Appendices are not subject to assessment.

A standard page contains 2,400 characters including spaces and footnotes. Cover page, table of contents, bibliography and appendices are not included. Appendices are not subject to assessment.

Exam in the Final Exam Project

The Final Exam Project completes the last semester of the degree programme after the student has passed all previous exams.

ECTS credits

The Final Exam Project totals 15 ECTS credits.

Form of exam

The exam comprises an oral and a written part with an external examiner. A single grade is given according to the 7-point scale for the written project and the oral performance.

5. Rules about credits

Successfully completed programme elements are equivalent to the same programme elements taught at other educational institutions offering the same degree programme.

The student is obliged to provide information about any programme elements completed at other Danish or foreign institutions of further education and about any past employment that may qualify for credits.

The educational institution approves credits on a case-by-case basis based on successfully completed programme elements and any employment equivalent to courses, programme elements and internship elements.

The decision will be based on an academic assessment.

A student who has obtained advance approval of studies in Denmark or abroad must document successful completion of such studies upon his/her return to this Academy.

In connection with the advance approval, the student must grant the institution the right to collect the necessary information upon completion of the studies abroad.

On acceptance as set out above, the programme element is considered completed, provided it was passed in accordance with the rules for the programme in question.

6. Effective date

Effective date

This national curriculum takes effect by 1 August 2019. Students admitted after this date will follow this curriculum, also all previously admitted students will be transferred to this curriculum as of 1 August 2019. Students who have commenced exams prior to this date will sit the exams according to the relevant curriculum in force until 1 August 2019.

At the same time, the national part of the curriculum of January 2015 is cancelled.

CURRICULUM
for
AP in Computer Science

Local part – Zealand Institute of Business and Technology

Effective from 01/08/2019
August 2019 version

Contents

1. The curriculum's reference to legal basis

The programme is governed by the following acts and orders
- Executive Order no. 786 of 8 August 2019: Executive Order on the Act on Academies of Professional Higher Education
- Executive Order no. 790 of 9 August 2019: Executive Order on the Act on Academy Profession and Professional Bachelor Degree Programmes (the LEP Act)
- Executive Order no. 841 of 24 June 2018: Executive Order on Academy Profession and Professional Bachelor Degree Programmes (the LEP Order)
- Executive Order no. 1500 of 2 December 2016: Executive Order on Tests and Exams in Vocational Further Education Programmes (the Examination Order)
- Executive Order no. 211 of 27 February 2019: Executive Order on Admission to Academy Profession and Professional Bachelor Degree Programmes
- Executive Order no. 114 of 3 February 2015: Executive Order on Grading Scale and Other Forms of Assessment
- Executive Order no. 858 of 22 August 2019: Executive Order on Admission to Technical and Vocational Academy Profession and Professional Bachelor Degree Programmes

The above may be subject to changes. Applicable acts and executive orders can be found at www.retsinfo.dk

2. Admission to the degree programme

Students are admitted to this programme according to the provisions of the Executive Order on Admission to Academy Profession and Professional Bachelor's Degree Programmes.

3. Course of the degree programme

The programme is a full-time education programme estimated at 30 months of full-time studies. A student year is equivalent to one year of full-time study. One year of full-time study is equivalent to 60 ECTS credits (European Credit Transfer System). The programme thus totals 150 ECTS credits.

Semester	Programme elements	ECTS	Exam
1.			Initial assessment test
2.	Programming	30 ECTS	First year exam
	Systems Development	15 ECTS	
	Technology	5 ECTS	
	Understanding Business	10 ECTS	
3.	Programming 2	10 ECTS	Programming test
	Technology 2	10 ECTS	
	Systems Development 2	10 ECTS	System development test
4.	Elective programme elements	30 ECTS	Exam elective element
5.	Internship	15 ECTS	Internship exam
	Main Exam Project	15 ECTS	Exam in the Final Exam Project

4. Local programme elements

The objectives for learning achieved are described in chapter 1 of the national part of the curriculum.

All programme elements on the first, second and third semesters are national programme elements, which are described in chapter 2 of the national part of the curriculum.

Local programme elements comprise only elective programme elements which are described in detail in an electives catalogue. The electives catalogue is modified at a regular basis, and there is no guarantee that a specific elective is offered.

For information on internship, please see the section "Internship and rules on completion".

4.1. Elective programme elements

Contents
The elective programme elements give the student an opportunity to enhance their academic and professional competencies by specialising and putting themes into perspective within the wider scope of information technology.

Every year, the programme offers a number of elective programme elements to be found on the Intranet. The elective programme elements can be offered at another Zealand address than the one the students are normally associated with. Elective programme elements can also be offered in the form of on-line/blended learning courses. See the electives catalogue for further information on specific learning objectives.

The student can also organise the elective programme elements at their option in the form of theoretic and/or practical schedules. The chosen programme must be approved by the programme manager.

Learning objectives
Knowledge
The graduate has:
- development based knowledge about practice and the main theories and methods used within the subject area of the chosen topic(s)
- understanding of practice and the main theories and methods used within the chosen topic(s)

Skills
The graduate will be able to:
- apply key methods and tools used within the subject area and the skills associated with the practices of the profession
- select, describe and search for literature concerning a problem of their own choice within the context of information technology
- discuss relevant processes and analytical approaches associated with the chosen topic(s)
- evaluate problems from practice and outline solutions in relation to the chosen topic(s)
- communicate central results and practice-related problems and solution options to cooperation partners and users

Competencies
The graduate will be able to:
- familiarise themselves with new topics in the context of the theory and/or practices of the discipline

- put the chosen topic(s) into a wide perspective and relate it/them to the other topics addressed during the programme.
- manage development-oriented situations within the chosen topic(s) in relation to information technology
- participate in technical and multidisciplinary cooperative efforts with a professional approach within the chosen topic(s)
- acquire new knowledge, skills and competencies relating to the chosen topic(s) in a structured context

ECTS credits
30 ECTS

5. Internship and rules on completion

Contents, general learning objectives and ECTS credits of the internship are described in chapter 3 of the national part of the curriculum. The internship exam is described in section 8.1.6 of this local curriculum.

The internship allows the student to work with relevant professional issues and to gain knowledge regarding relevant work functions. The student's objectives for the internship are based on the relationship between the theory taught and the internship.

The internship is intended to be equivalent to a full-time job with the same requirements in terms of working hours, performance, involvement and flexibility that a graduate must be expected to meet in their first job. The internship can form the basis of the student's final project and can be planned to allow both flexibility and differentiation.

Internship contract
The student, the business academy and the company agree upon the specific contents of the student's internship, based on the general learning objectives for the internship.

The internship contract must include the individual learning objectives for the internship as well as a description of the task or tasks which the student will solve for the company. This forms the subsequent guidelines for how the student's work is structured in the internship.

The internship contract may include an agreement on working hours and reporting.

Understanding Business
The company appoints a contact person at the company.

The company contributes with specific and realistic problems/working tasks which they want the student to work on.

The company makes information available to the student, which he/she needs to solve the tasks.

The company must regularly evaluate the student's activities during the internship and in case of problems report these to the student and the supervisor or internship counsellor at the business academy.

The student
The student is expected to take initiatives to find companies which are relevant for the specific subject area.

The student is obliged to comply with the internship contract, as the internship is a compulsory part of the degree programme.

The business academy
The business academy will to a limited extent make a supervisor available to the company and the student.

The business academy will make one visit to the company during the internship. This visit may be arranged virtually, if the internship is abroad. This also applies if the number of internships or other important reasons make it difficult to visit all involved companies.

For further information on the internship, please contact the internship counsellor of the study programme.

6. Ways of instructing and working

The teaching includes lectures, classroom lessons, dialogues, exercises, presentations, cases, seminars, guest lecturers, projects and internships.

The instruction incorporates the latest knowledge and results from national and international research, experimental and development work within the disciplines relevant for the profession.

The instruction draws on practical experience and knowledge about key trends in the profession and methods to further develop the subject and carry out development work and a high standard of work in general.

In order to ensure optimum academic learning and personal development in each student, the Computer Science programme applies various pedagogical approaches, with the main emphasis on dialogue, discussion and project work.

6.1. Reading texts in foreign languages
Most of the teaching material used in the programme is in English and some of the teaching may be conducted in English.

Knowledge of additional foreign languages is not required, beyond the requirements laid down in the Executive Order on Admission.

6.2. Differentiated instruction
The teaching is given a variable structure and offers lessons in class, guest lecturers, company visits, project work in groups and individualised work – often in an multidisciplinary context and always focusing on the usability aspect. In addition to academic skills, the different ways of learning help the students develop their abilities to work on their own and together with others.

7. Internationalisation

7.1 Studies abroad
The student may complete elective programme elements, internship and Final Exam Project abroad subject to advance approval by the education institution.

A student who has obtained advance approval of a study period abroad is obliged to document the subjects completed during the approved study period at the end of the period. In connection with the advance approval, the student must grant the institution the right to collect the necessary information upon completion of the studies abroad.

If advance credits are awarded, the course is considered to have been completed, provided it was passed in accordance with the provisions applicable to the programme in question.

7.1.1 Examinations when studying the fourth semester abroad
The student must sit their exams at the partner institution abroad. The student must also document the learning outcome from the subjects studied at the partner institution online in a portfolio. The student writes a report for each subject describing the learning outcome of the subject.

The report must have an extent appropriate for the points awarded for the subject(s), although minimum three standard pages of 2400 characters for each page.

All assignment and their answers must be documented online in the portfolio. Links to the portfolio and the documentation substantiating exam(s) passed at the partner institution must be submitted to the original educational institution at the latest four weeks after the exams abroad have been taken. The portfolio, including the reports on the learning outcome, is given a Pass or a Fail.

See also section 4.1 on Elective programme elements and section 8.1.5 on Exam elective element.

7.2 Agreements with foreign educational institutions about parallel studies
Information about partner institutions, international internships, credit transfer and procedures will be published regularly by Zealand.

8. Exams in this programme

The purpose of tests in the programme elements is to document to which degree the student fulfils the professional goals set by the programme and its elements. The mark of 02 is required to pass an exam. The student is entitled to sit each exam three times. A student cannot re-sit an exam once it has been passed. The student is responsible for familiarizing themselves with and comply with the business academy's rules for tests and exams. Registration for a programme element, semester etc. also counts as registration for the exams. This programme does not allow for withdrawal from exams.
For formal requirements to the Main Exam Project, see section 8.2.

Programme element may include one or more compulsory study activities which are defined and described by the course teacher and appear from the study plan. Compulsory activities must be completed and approved before the student can be accepted for the exam. If a student does not comply with the conditions, the student cannot sit for the exam and has used an attempt.

- The lecturer arranges compulsory study activities.
- The lecturer follows up on any students who do not attend or fail or for some other reason do not comply with the compulsory study activities. A student may re-submit answers to compulsory study activities once.
- The lecturer notifies the student counsellor and the programme manager of any assignments/conditions not complied with.

Compulsory study activities must be submitted/realised and approved for the student to be considered actively studying. If the assignment involves an oral presentation, the student has the duty to meet for this.

Answers for exams and compulsory study activity may be required to be submitted electronically. The regulations governing electronic submission can be found on the Intranet.

8.1. Exam descriptions
The degree programme comprises a number of different forms of exams that reflect the content and work methods used in the programme.

8.1.1 Initial assessment test
The initial assessment test aims to clarify whether the student has actually commenced the programme. Students must sit for the initial assessment test no later than two months after the programme has started and they must receive the results at the latest two weeks after the test. Students who fail this test may be tested again. This test takes place within three months of the start of the programme. A student has two attempts to pass the initial assessment test. The test is given a pass/fail grade (internal examination) and credit points are not allocated.

Complaints about exams cannot be made for the initial assessment test. It is only possible to make complaints about legal matters, for instance regarding the date of the test or the number of attempts. The business academy may grant students an exemption from the deadlines for passing the initial assessment test, if necessary, as a result of illness, giving birth or unusual circumstances.

Examination structure and contents
The form and contents of the test are found on the Intranet.

Scheduling of the test and possible re-assessment
The initial assessment test is scheduled 3-4 weeks into the programme.

Assessment and communication of result
The test is given a pass/fail grade and the result is communicated no later than one week after the test.

8.1.2 First year exam
The first year exam consists of the exam which the student according to this curriculum must sit before the end of the first year of studying. The first year exam must be passed before the student completes the first year of studies in order for the student to continue in the degree programme.
A reference to the current Executive Order on Tests and Exams in Vocational Further Education Programmes can be found in section 1.

Prerequisites for sitting this exam
There are a number of compulsory study activities linked to the exam, all specified in the semester schedule. Compulsory study activities for the first year must be passed in order for the student to sit the first year exam.

The first year project, which is used both for the assessment and the examination, must comply with the formal requirements, cf. below, and must be submitted on time, cf. the submission date on the business academy's Intranet.

Failure to comply with just one or more compulsory study activities or correct submission of the first year project, which constitutes the written part of the exam, has the effect that the student cannot sit for the exam and he/she has used one attempt.

Examination structure and contents

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

The group can comprise no more than five students.

A single mark will be given based on a general assessment of the written product and the oral performance during the examination.

The project group will be given 10 minutes for each student for the presentation, up to no more than 30 minutes. Following this the individual members of the group will be subjected to individual examination. Each student is allocated 30 minutes including evaluation and awarding of grades.

The project report may total 40 standard pages as a maximum. A standard page contains 2,400 characters including spaces and footnotes. Cover page, table of contents, bibliography and appendices are not included in the required number of pages. Appendices are not subject to assessment.

Failure to comply with these conditions has the effect that the student cannot sit for the exam and has used on attempt.

Formal requirements

The first year project must fulfil the following formal requirements:
- Cover page with title and scope of the report, stated in total number of characters including spaces
- List of main authors of the report parts
- Path to version management server where the source code and the executable code for the product can be found

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria

The assessment criteria for the exam = the learning objectives for the national programme elements: Programming, Systems Development, Technology and Business Understanding. See section 2.1-2.4 in the national part of the curriculum.

Scheduled for

The exam is scheduled for the end of the second semester. Details about time and place and about submission of the written group project can be found on the Intranet.

The exam must be passed by the end of the first year of studies in order for the student to continue their studies.

The programme may grant students an exemption from the deadlines laid down for passing the exams, if necessary as a result of illness, giving birth or unusual circumstances.

ECTS credits

The exam totals 60 ETCS credits.

Cancellation to sit the exam

Not possible.

8.1.3 Programming test

Prerequisites for sitting this exam
Only students who have passed the first year exam can continue their studies at the third semester or later.

There are a number of compulsory study activities linked to the exam, all specified in the semester schedule. If the student has not completed the compulsory study activities, he/she may not sit for the exam and will have used one attempt.

Examination structure and contents
The exam is an external, individual exam where the student works with programming and technology during the 4-6 hour examination period. Students may not leave the examination room before the time is up. The internal and the external examiners will ask questions while the students sit in the examination room working on the assignment. The students will be given their assignments at the beginning of the exam. The assignment will be composed by the internal examiner and will comprise theoretical and practical elements from the core areas Programming and Technology. At the end of the exam the student will be awarded a single grade according to the 7-point scale.

All electronic aids are permitted. Communication with parties other than the internal and the external examiners is not allowed during the exam.

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria
The assessment criteria for the exam = the learning objectives for the national programme elements: Programming 2 and Technology 2 in the third semester. See section 2.5-2.6 in the national part of the curriculum.

Scheduled for
The exam is scheduled for the end of the third semester. Details about time and place can be found on the Intranet.

ECTS credits
The exam totals 20 ETCS credits.

Cancellation to sit the exam
Not possible.

8.1.4 System development test

Prerequisites for sitting this exam
The students submit a systems development report which will be used for the examination. The report must be a group report with no more than five students in each group.

Failure to comply with these conditions has the effect that the student cannot sit for the exam and has used on attempt.

Examination structure and contents
The exam is an internal, oral group exam assessed according to the 7-point scale.

Grading is individual. A single mark will be given based on a general assessment of the performance and the subsequent performance during the examination.

The project group will be given 10 minutes for each student for the presentation, up to no more than 30 minutes. Following this the individual members of the group will be subjected to individual examination. Each student is allocated 20 minutes including evaluation and awarding of grades.

Formal requirements
The written product, the systems development report, which is the point of departure of the exam, must comply with the formal requirements as set out below and must be submitted in time, cf. the exam schedule to be found on the Intranet.
- Cover page with title and scope of the report, stated in total number of characters including spaces
- List of main authors of the report parts

No more than 30 standard pages, one standard page contains 2,400 characters including spaces and footnotes. Cover page, table of contents, bibliography and appendices are not included.

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria
The assessment criteria for the exam = the learning objectives for the national programme element: Systems Development 2. See section 2.7 in the national part of the curriculum.

Scheduled for
The exam is scheduled for the end of the third semester. Details about time and place can be found on the Intranet.

ECTS credits
The exam totals 10 ETCS credits.

Cancellation to sit the exam
Not possible.

8.1.5 Exam elective element

Prerequisites for sitting this exam
- The student must prepare a synopsis to be used as the point of departure for the oral exam. The synopsis must comply with the formal requirements as set out below and must be submitted in time, cf. the exam schedule to be found on the Intranet.
- Each elective element has a number of compulsory programme elements. The specific programme elements appear from the lecturer's course plan. These programme elements must be submitted to and approved by the lecturer.

Examination structure and contents
The exam is an internal, individual oral exam based on a synopsis and assessed according to the 7-point scale. The student is free to choose the topic of their synopsis.

A single mark will be given based on a general assessment of the written product and the oral performance with the synopsis weighing 20%.

The student is to make a presentation of the synopsis, no more than 10 minutes. The presentation will be followed by an individual examination period of 20 minutes, including evaluation and awarding of grade.

Formal requirements
Formal requirements to the synopsis:
- Reason(s) for choosing the topic
- Source reference
- Outline
- Main part – description of the work
- Bibliography (including all sources referred to in the project)
- Appendices (only appendices of key importance to the report)

The synopsis can be no more than 10 standard pages plus any programs and a running system.

A standard page contains 2,400 characters including spaces and footnotes. Cover page, table of contents, bibliography and appendices are not included. Appendices are not subject to assessment.

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria
The assessment criteria for the exam = the learning objectives for the local programme element: Elective programme elements. See section 4.1 in the local part of the curriculum. The learning objectives context is defined by the individual electives which the synopsis is based upon.

Scheduled for
The exam is scheduled for the end of the fourth semester. Details about time and place and about submission of the written group project can be found on the Intranet.

ECTS credits
The exam totals 30 ETCS credits.

Cancellation to sit the exam
Not possible.

8.1.6 Internship exam

Prerequisites for sitting this exam
The student must meet the following conditions to sit for the exam:
- Internship report, which is used both for the assessment and the examination, must comply with the formal requirements, cf. below, and must be submitted on time, cf. the exam schedule on the Intranet.

Failure to comply with just one or more study activities or correct submission of the internship report, which constitutes the written part of the exam, has the effect that the student cannot sit for the exam and he/she has used one attempt.

Examination structure and contents
The exam is an internal, individual written exam based on an internship report assessed according to the 7-point scale.

The internship report will be assessed by the student's internship tutor in consultation with an internal examiner.

A single mark will be given based on an assessment of the written product.

Formal requirements
Formal requirements to the internship report
- Cover page stating name, host company, educational institution, internship dates
- Short description of the company
- Reflections on the fulfilment of the specific learning objectives
- Description of specific tasks
- Reflection on the completion of the scheduled internship
- Conclusion
- Appendix: Internship schedule, the company's recommendation and the logbook
- Any additional appendices (only appendices of core importance to the report)

The internship report can total maximum 10 standard pages plus appendices.

A standard page contains 2,400 characters including spaces and footnotes. Cover page, table of contents, bibliography and appendices are not included. Appendices are not subject to assessment.

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria
The assessment criteria for the exam = the learning objectives for the internship. See section 3 in the national part of the curriculum.

Scheduled for
The exam will take place once the internship has been concluded. Details about time and place and about submission of the internship report can be found on the Intranet.

ECTS credits
The exam totals 15 ETCS credits.

Cancellation to sit the exam
Not possible.

8.2. Main Exam Project
The general formal requirements for the final exam project is described in chapter 4 of the national part of the curriculum. Further requirements are detailed below.

8.2.1 Exam in the Final Exam Project

Prerequisites for sitting this exam
The student must meet the following conditions to sit for the exam:
- The students must have passed all exams in the programme prior to this.
- The written project must fulfil the formal requirements, cf. below.

Failure to submit the written project correctly, which constitutes the written part of the exam, has the effect that the student cannot sit the exam and has used one attempt.

Examination structure and contents

The exam is an external, oral group exam based on a written group project.

A single mark will be given based on a general assessment of the written product and the oral performance. The performance is assessed according to the 7-point scale. For the grade, the weighing of the project report and the oral presentation is as a guideline 70/30, unless the overall assessment gives rise to dispense with this weighing.

The group can comprise no more than four students.

The project group will be given 10 minutes for each participant for the presentation, up to no more than 30 minutes. Following this the individual members of the group will be subjected to individual examination. Each student is allocated 20 minutes including evaluation and awarding of grades.

Formal requirements

The following formal requirements apply to the Main Exam Project:
- The written project, which is used both for the assessment and the examination, must comply with the formal requirements to the Final Exam Project, cf. the national part of the curriculum, and must be submitted on time, cf. the exam schedule on the Intranet.
- The project cover page must state the scope of the report, stated in number of characters including spaces.
- The project must include a list of main authors of the report parts.

The exam language is Danish or English, cf. the language of the programme, the student is enrolled in.

Assessment criteria

The assessment criteria are the learning objective of the exam = the learning objectives of the Main Exam Project, cf. section 4 of the national part of the curriculum.

Scheduled for

The exam is scheduled for the end of the fifth semester. Details about time and place can be found on the Intranet.

ECTS credits

The exam totals 15 ETCS credits.

Cancellation to sit the exam

Not possible.

8.2.2 The importance of spelling and writing skills for the assessment

Spelling and writing skills are included in the assessment of the Main Exam Project. The assessment reflects an overall assessment of the academic content as well as writing and spelling ability. However, the academic content has priority in this overall assessment.

Students who can document a relevant disability can apply for an exemption from the requirement that spelling and writing skills are included in the assessment. Applications must reach the programme manager at the latest four weeks before the examination date.

8.3. Language used in the exams

Exams are conducted in Danish unless otherwise mentioned in the description of the exams. Exams can be conducted in Swedish or Norwegian instead of Danish. Exams in programmes or individual courses offered in English or another language can be conducted in this language.

Students with mother tongues other than Danish may apply for an exemption from the requirement that spelling and writing skills form part of the assessment of the main project or the Main Exam Project as well as any other exams for which this curriculum states that the mentioned skills should form part of the assessment. Applications must reach the programme manager at the latest four weeks before the examination date. For exams which include submission of a report, the examination procedure starts on the day of the submission.

8.4. Special exam arrangements

Student may apply for special exam arrangements if warranted by physical or mental impairment. Applications must reach the programme manager at the latest four weeks before the examination date. Exemptions from the date of application may be granted in the event of sudden health issues. A medical certificate, a statement from for example a body dealing with speech, hearing or sight impairment, dyslexia, or other forms of documentation must be enclosed with the application certifying serious health issues or specific relevant functional impairment.

The application for permission to bring other aids for an exam must be sent to the programme manager at the latest four weeks before the exam.

For exams which include submission of a report, the examination procedure starts on the day of the submission.

8.5. Re-examination

Special rules apply to re-examination for the initial assessment test, see section 8.1.1.

8.5.1 Re-examination due to illness

A student who was prevented from sitting an exam due to documented illness or other documented reasons is allowed re-examination as soon as possible. Is the exam scheduled for the final exam period of the programme, the student will be given an opportunity to sit the exam within the same exam period or immediately after. The student is automatically registered for the re-exam when this is due to illness.

Information about time and place of illness exams can be found on the department communication platform.

Illness must be documented by a medical certificate (any costs for getting this documentation is covered by the student). The educational institution must receive the medical certificate at the latest eight workdays after the exam has taken place. A student who is taken acutely ill during an exam must document that he/she was ill on the day concerned.

If illness is not documented as laid down above, the student has used one attempt at sitting the exam.

8.5.2 Re-examination

In the event of failure to pass an exam (including non-attendance without a documented reason), a new exam must be held as soon as possible and as far as possible when this exam is held again, possibly as a make-up exam. The student is automatically registered for the re-exam, as long as he/she has further attempts.

It is up to the student to find out when the re-exam will take place.

Information about time and place of re-exams can be found on the department communication platform.

The programme manager may grant exemptions from the continued registration procedure if warranted by unusual circumstances, including documented disability.

8.6. Cheating at exams
When handing in a written answer, students must sign to confirm that the answer was completed without undue assistance.

8.6.1 Using one's own work and that of others – plagiarism
Cheating in exams through plagiarism comprises instances where a written answer is presented as if completely or partially produced personally by the student(s), also if the answer:
- comprises identical or almost identical repetitions of the wording or work of others, without clearly stating the source (see the institution's requirements to written work).
- comprises major pieces of text with wording so close to that of another piece of writing or similar wording etc. that when comparing the texts, it is possible to determine that the text pieces could not have been written using any other sources
- comprises the use of words or ideas of others without referencing these originators in an appropriate manner
- re-uses text and/or key ideas from the student's own previously assessed answers without stating source.

The programme manager will be notified if during or after an exam there is the presumption that a student:
- has received or given unauthorised help,
- has presented the work of another person as the student's own (plagiarism), or
- has used the student's own previously assessed work or parts thereof without referring to it (plagiarism).

8.6.2 Investigation of cheating offences in exams, including plagiarism
Postponement of the exam
If the cheating concerns plagiarism in a written report and/or answer which is used in the assessment of a subsequent oral exam, the programme manager postpones the exam, if the issue cannot be resolved before the date set for the exam.

Form and content of the report
Reporting must be made without undue delay. The report must be accompanied by a written description of the breach, comprising information that can identify the individuals reported on in addition to a brief summary and the documentation substantiating the matter. In the event of repeated offences, involving one or more people, this must be stated.

When reporting on plagiarism, the plagiarised parts must be marked with clear reference to the sources of the plagiarised content. Similarly, the plagiarised text must be marked in the source text.

Involving the student – hearing of the party(-ies)
The programme manager decides whether the hearing of the student should be oral, in writing or a combination thereof.

For the oral hearing, the student is summoned to an interview with the purpose of clarifying the matter in order to present the documentation substantiating the presumed cheating in the exam to the student and to hear their point of view. The student has the right to be accompanied by a person of own choice.

For the written hearing, the documentation substantiating the presumed cheating in the exam is forwarded in order to ask the student to make a written statement of the student's point of view.

8.6.3 Sanctions for cheating offences and disruptive behaviour during exams
If the clarification of the matter confirms the presumed cheating offence to the programme manager and the action has or would have affected the assessment, the programme manager expels the student from the exam.

If the cheating offence or disruptive behaviour is less serious, the educational institution will initially issue a warning.

Under aggravating circumstances, the programme manager can expel the student for long or short periods of time. In such cases the student receives a written warning to the effect that repeated offences may lead to permanent expulsion.

Expulsion according to the above terms will lead to cancellation of any grades that may have been granted for the exam concerned, and the exam will count as one attempt.

The student cannot sit a re-examination and cannot sit the exam until the exam is scheduled on ordinary terms as part of the degree programme.

Under aggravating circumstances, the programme manager may decide to expel the student from the educational institution for a short or long period of time. In such cases the student receives a written warning to the effect that repeated offences may lead to permanent expulsion.

During a period of expulsion, the student may not attend classes or exams.

The programme manager may grant an exemption.

8.6.4 Complaints about sanctions on account of cheating, plagiarism or interruption of an exam
The decisions that an attempt at the exam has been used and expulsion due to a cheating offence at an exam are final and complaints cannot be brought before a higher administrative authority.

Complaints about legal aspects (such as incapacity, hearing, complaints instructions, correct or incorrect interpretation of the Examination Order etc.) can be lodged with the Danish Agency for Science and Higher Education. The complaint is forwarded to Zealand via the complaints system at https://www.zealand.dk/eksamensklager/, for the attention of the programme manager. The manager makes a statement which the applicant must be allowed time to comment on, normally one week. The educational institution forwards the complaint, the statement and any comments that the applicant may have made to the Danish Agency for Science and Higher Education. Complaints must reach the educational institution at the latest two weeks from the day that the complainant was notified of the decision, cf. chapter 10 of the Examination Order.

9. Miscellaneous rules applicable to the programme

9.1. Credits
Credit transfer arrangements for the national programme elements are found in the national part of the curriculum.

9.1.1 Credit transfer arrangements for programme elements covered by the local part of the curriculum

Programme elements that a student has passed are equivalent to similar programme elements studied at other educational institutions offering this degree programme as well as other programmes.

The student may apply for advance credits, if he/she believes to have credit transferable programme elements.

9.2 Termination of enrolment

The Executive Order on Admission (see section 1) describes when a student's enrolment with a programme can be terminated, including a not passed initial assessment test/first year exam and exhausted examination attempts. Zealand's supplementary rules are detailed below.

Enrolment with the studies may be terminated for students who have passed less than 45 ECTS credits per year of studying. A student has three attempts to pass the exams.

Enrolment with the studies may be terminated for students who have not passed any exams for a consecutive period of at least 12 months. Periods when the student has not participated in any exams due to leave, giving birth, adoption, documented illness or conscription will not be included. Upon request the student must produce documentation substantiating these circumstances. The programme may make exemptions from these provisions in the event of unusual circumstances. Applications for exemptions complaint should be submitted to the programme manager.

The student receives a written warning from Zealand before the enrolment is terminated. In that connection the student is made aware of the rules above. It will further appear from the letter that the student has fourteen days to submit their comments (hearing of the party) and documentation for periods of leave, giving birth, adoption, documented illness or conscription. The letter also states a deadline for applying for exemption.

If the student fails to react within the stipulated deadline, their enrolment is terminated.

If the student pleads that enrolment should not be terminated, the termination awaits the programme manager's final decision.

The student may complain to Zealand about the decision within two weeks of receiving the decision. The complaint is sent to Zealand via the complaints system at https://www.zealand.dk/eksamensklager/. The complaint has no delaying effect.

If the decision is maintained, the business academy will make a statement which the student may comment on, normally within a deadline of one week. The educational institution forwards the complaint, the statement and any comments that the applicant may have made to the Danish Agency for Science and Higher Education. The Agency informs the student of the final decision after having dealt with the complaint. Decisions of the Agency cannot be lodged with any other administrative body.

9.3. Complaints

The student is recommended to ask the student counsellor for guidance on the complaints procedure and how to prepare a complaint. The rules governing complaints concerning exams are found in the Examination Order.

The Examination Order differentiates between complaints about:

- the scope of the examination etc., the examination procedure and/or the assessment and
- complaints about legal matters.

The two types of complaints are treated differently. All complaints are sent to Zealand via the complaints system at https://www.zealand.dk/eksamensklager/

9.3.1 Complaints about the scope of the examination etc., examination procedure and assessment

A student can submit a written complaint, stating their reasons, within two weeks after the assessment was communicated in the usual way, concerning:
- the scope of the examination, including questions asked, work submitted etc., and the exam relative to the objectives and demands of the programme
- the examination procedure
- the assessment.

The complaint may concern all exams, including written, oral and combinations thereof, and practical or clinical exams.

The original examiners (the internal examiner(s) and the external examiner, if applicable) of the exam concerned, must be presented with the complaint immediately. The educational institution must be able to form its decision in relation to academic issues based on the statement from the examiners. Normally, the educational institution allows two weeks to make the statements.

Immediately when the examiners' statements are available, the complainant is given an opportunity to comment on the statements, normally within one week.

The educational institution makes decisions regarding complaints based on the academic opinion presented by the examiners and the complainant's comments on the opinion. The decision, which must be in writing, stating reasons, may involve:
- an offer for a new assessment (re-assessment) – although only written exams
- an offer for a new exam (re-examination)
- the decision is not in favour of the student.

If the decision is to offer re-assessment or re-examination, the programme manager appoints a review panel. Re-assessment applies only to written exams where material is available for assessment, partly because the review panel cannot make a (re-)assessment of an oral exam that has already been held and because the notes made by the original examiners are personal and cannot be divulged. If the decision is to offer re-assessment or re-examination, the applicant must be told that re-assessment or re-examination may lead to a lower mark. Within a period of two weeks after the decision has been communicated, the student must accept the offer. Acceptance cannot be cancelled. If the student does not accept within this period of time, there will be no re-assessment or re-examination.

Re-assessments or re-examinations must take place as soon as possible. For re-assessments the documentation of the matter must be made available to the review panel: The question(s), the answer(s), the complaint, the statements made by the original examiners with the complainant's comments and the educational institution's decisions. The review panel notifies the educational institution of the outcome of the re-assessment and encloses a written statement with the reasons and the actual assessment. Re-assessments or re-examinations may produce lower grades. If the decision is to offer re-assessment or re-examination, this decision applies to all students if the exam suffers from the same defects as those referred to in the complaint.

If the due date of the deadline for complaints (two weeks/14 calendar days) is on a public holiday, the due date will be the first workday following the public holiday. Exemptions from the deadline can be made in the event of unusual circumstances.

9.3.2 Appeal

As regards academic issues, appeals may be lodged against the educational institution's decision with an appeals panel. The activities of the appeals panel are governed by the Public Administration Act, this also includes incapacity and confidentiality.

The appeal is sent to Zealand via the complaints system at https://www.zealand.dk/eksamensklager/
Appeals must be lodged at the latest two weeks after the student was informed of the decision. The requirements as above for complaints (in writing, stating reasons etc.) also apply to appeals. The appeals panel consists of two authorised external examiners, who are appointed by the chairman of the external examiners, a lecturer authorised to conduct examinations and a student studying the subject area (the degree programme), both of which are appointed by the programme manager.

The appeals panel makes decisions based on the material that the educational institution used for its decision and the student's appeal, with reasons stated for the appeal.
The appeals panel considers the appeal and the decision may result in:
- an offer for re-assessment by new reviewers, although only written exams
- an offer for a new exam (re-examination) by new examiners
- the decision is not in favour of the student.

If the decision is to offer re-assessment or re-examination, the applicant must be told that re-assessment or re-examination may lead to a lower mark. Within a period of two weeks after the decision has been communicated, the student must accept the offer. Acceptance cannot be cancelled.
If the student does not accept within this period of time, there will be no re-assessment or re-examination.

Re-assessments or re-examinations must take place as soon as possible. For re-assessments the documentation of the matter must be made available to the review panel: The question(s), the answer(s), the complaint, the statements made by the original examiners with the complainant's comments and the educational institution's decisions. The appeals panel must reach a decision at the latest two months – for summer exams three months – after the appeal has been submitted. Decisions of the appeals panel are final. This means that the matter cannot be brought before a higher administrative authority as regards the academic aspects of the complaint.

9.3.3 Complaints about legal matters

Complaints about legal aspects of decisions made by the review panel in connection with reassessments or re-examinations or about decisions of the appeals panel can be brought before Zealand via the complaints system at https://www.zealand.dk/eksamensklager/. The deadline for submitting of complaints is two weeks from the day the decision has been communicated to the complainant. The business academy will then make a decision.

Complaints about legal aspects of decisions made by the educational institution pursuant to the rules laid down by the Examination Order (such as incapacity, hearing, correct or incorrect interpretation of the Examination Order etc.) can be submitted to Zealand via the complaints system at https://www.zealand.dk/eksamensklager/. The educational institution issues a statement and the complainant must be given normally one week for commenting. The educational institution forwards the complaint, the statement and any comments that the applicant may have made to the Danish Agency for Science and Higher Education. Complaints must be submitted to the institution not later than two weeks from the day when the decision was communicated to the applicant.

Also see section 9.2 regarding complaints relating to termination of enrolment.

9.4. Exemption rules
The educational institution may grant an exemption from the provisions of the national part part of the curriculum when warranted by unusual circumstances. The institutions work together to ensure uniform exemption practices.

When special conditions warrant it, the educational institution may grant an exemption from rules in the curriculum defined by the educational institution concerned or other educational institutions.

10. Finance

All expenses for activities expected to be carried out by the student are to be borne by the student, unless otherwise provided.