Institutional part
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Curriculum 2020

Software Development

PROFESSIONSHØJSKOLEN

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This is a translation made for information purposes only. In the event of any discrepancy between this translation and the original Danish document, the Danish text shall prevail.

1. Institutional part of the curriculum for the Bachelor's Degree Programme in Software Development

The curriculum for the programme is comprised of two parts (i.e. two sets of regulations):

1. The national part
2. The institutional part

The national part is laid down by the study programme network with a view to ensuring that the academic contents of the national part of the study programme is identical for all educational institutions providing the study programme.The institutional part is laid down by the UCN study programme and is designed to accommodate local and regional needs.

The institutional part of the curriculum (as well as the national part) has been approved by University College of Northern Denmark (UCN) in accordance with all regulations applying to the programme, including *Bekendtgørelse om tekniske og merkantile erhvervsakademiuddannelser og professionsbacheloruddannelser* (the Ministerial Order on technical and mercantile academy profession degree programmes and professional bachelor's degree programmes).

In the event of any discrepancy between this curriculum and other regulations governing the study programme, the other regulations have priority.

2. Distribution of national and local subject elements, internship and exams during the course of the study programme.

Sem.	National subject elements	Local subject elements	ECTS	Internal/ External
1.	Test		10	External
	Databases for developers		10	External
		Discrete mathematics	5	Internal
		Investigation and professional communication	5	Internal
2.	Developing Large Systems		10	External
	System integration		10	External
		Security for developers	5	Internal
		Elective	5	Internal
3.	Internship		15	Internal
	Bachelor’s degree project		15	External
Total ECTS credits			**90**	

Overview of all examinations and their order. All examinations are assessed according to the 7-point grading scale. Find information about the time and venue for the exams on Pointer.

3. Local subject elements, including electives

The programme features 20 ECTS credits worth of local subject elements.

3.1 Discrete mathematics

3.1.1 Learning objectives

Knowledge
Upon completion of the course, the student should have acquired knowledge of:

- fundamental mathematical structures (propositional and predicate logic, sets and multisets, functions and relations)
- mathematical proof techniques
- induction and recursion
- program assertions, validity and correctness of programs

Skills
Upon completion of the course, the student should be able to:

- construct simple mathematical proofs, including induction proofs
- express functional specifications in predicate logic
- apply formal specifications for the verification of program elements.

Competencies
Upon completion, the student should have acquired the competencies to:

- acquire knowledge and skills in software development that require knowledge of mathematical concepts and structures.

3.1.2 ECTS credits

The 'Discrete mathematics' subject element has a workload of 5 ECTS credits.

3.1.3 Content

The subject element comprises the following key subjects: Sets, logic, functions and relations, proof techniques, induction and recursion as well as formal specifications and program assertions.

3.2 Investigation and professional communication

3.2.1 Learning objectives

Knowledge

Upon completion of the course, the student should have acquired knowledge of:

- key concepts in academic and subject-specific investigations
- source types and their quality
- methods for the production of knowledge and quality assessment of such knowledge
- various forms of presentation.

Skills

Upon completion of the course, the student should be able to:

- identify and define problems
- select appropriate forms of research for a given problem
- perform research in a methodical manner
- draw conclusions on the basis of research results and put them into a wider context
- present research to well-defined target groups.

Competencies

Upon completion of the course, the student should be able to:

- find sources of subject-specific knowledge and assess their quality
- contribute to the creation of new subject-specific knowledge through systematic research.

3.2.2 ECTS credits

The 'Investigation and professional communication' subject element has a workload of 5 ECTS credits.

3.2.3 Content

The subject element comprises the following key subjects: Introduction to philosophy of science, information seeking and source criticism, quantitative and qualitative methods, proof of concept prototypes and forms of presentation, including writing up academic and subject-related articles.

3.3 Security for developers

3.3.1 Learning objectives

Knowledge

Upon completion of the course, the student should have acquired knowledge of:

- Data protection regulations
- Software threats and countermeasures
- Criteria for program quality in relation to IT security
- principles of secure data exchange, including authentication and authorisation.

Skills

Upon completion of the course, the student should be able to:

- apply APIs and/or standard libraries
- discover and handle vulnerabilities in programs
- apply security design principle, including security by design and privacy by design.
- security assess and security test software architectures.

Competencies

Upon completion of the course, the student should be able to:

- integrate assessment of security risks in the development process
- acquire knowledge and skills relevant to security in software development.

3.3.2 ECTS credits

The 'Security for developers' subject element has a workload of 5 ECTS credits.

3.3.3 Content

The 'Security for developers' subject element generally deals with security issues related to software development (including security and privacy) as well as data protection regulations. The subject element adopts a developer perspective. During the course of the subject element, the student will delve into selected security aspects in connection with a specific development assignment.

The subject element adopts an international perspective and includes the possibility of going on a two-week stay at a foreign education institution.

3.4 Elective

The student selects one of the subject elements 'Individual study' or 'Syntax and semantics'.

3.4.1 Learning objectives

Individual study:

Knowledge

Upon completion of the course, the student should have acquired knowledge of:

- the theory and practice of the selected topic
- the relevance of the selected topic to the theory and practices of software development.

Skills

Upon completion of the course, the student should be able to:

- select, describe and perform literature searches for a problem or issue they selected within the software development discipline
- discuss process-related and analytical skills related to the selected topic
- assess problems and specify possible solutions in relation to the selected topic
- communicate central results.

Competencies

Upon completion of the course, the student should be able to:

- independently acquaint themselves with new topics within the theory or practice of the subject field

- contextualise and relate the selected topic to the other subject fields of the study programme.

Syntax and semantics:

Knowledge

Upon completion of the course, the student should have acquired knowledge of:

- fundamental concepts in automata theory and operational semantics
- computational models for language recognition
- limitations in the computing power of specific computational models and its significance to practical projects
- basic semantic models
- mathematical properties of formal language classes.

Skills

Upon completion of the course, the student should be able to:

- construct mathematical proofs of the properties of computational models and language classes
- apply formal computational models to practical work
- take part in theoretical projects
- prepare formal descriptions of language and computational models
- design and implement language recognisers.

Competencies

Upon completion of the course, the student should be able to:

- acquire knowledge and skills in software development that require an understanding of formal language concepts.
- take part in the development of tools for software development.

3.4.2 ECTS credits

The 'Elective' subject element has a workload of 5 ECTS credits.

3.4.3 Content

Individual study
As an introduction, the subject element has a number of seminars (usually three) introducing subjects that are not covered by the other subject elements. Based on these introductory seminars, the student will select a subject for more in-depth study. The subject must be relevant to software development and must not be covered by the other subject elements. UCN approves the subject and the student is allocated a supervisor. The results of the individual study must be reported in the form of an academic or subject-related article.

Syntax and semantics
The subject element covers the following topics: Finite automata, non-determinism, pushdown automata, regular languages, context-free grammars, derivation trees, big-step and small-step semantics.

4. Framework and criteria for the examinations on the study programme

The following describes the framework and criteria for all examinations on the study programme.

4.1 Automatic registration for all examinations

A subject element is finalized by an examination that takes place immediately after the end of the subject element. When a student commences a subject element, (s)he is automatically registered for the ordinary examination for that subject element.

A student cannot withdraw from study programme exams.

If an examination has not been passed, the student will continue to be registered for that particular examination and must attend a re-sit exam. A student has three attempts at passing an exam. If the exam is not passed after three attempts, the student's enrolment in the programme will be terminated.

However, if the student is on leave of absence, (s)he will not automatically be registered for exams. After the leave of absence has ended, the student will automatically be registered for the examinations that complete the semester that the student has just commenced, and for any examinations that have not been passed.

It is the student's responsibility to stay informed of the time and venue for exams on the study programme's electronic platform.

Please see the current *Examination Regulations for UCN's Undergraduate Programmes*, which are available on UCN's website.

5. 1st semester

5.1 The examination for the national subject element 'Test'

5.1.1 Examination prerequisites

The project must be submitted not later than two weeks before the exam. The project must be prepared as an integrated report allowing the examination of the learning objectives for the subject elements 'Test' and 'Databases for developers'. The project is prepared by groups of two to four students or individually.

Formal requirements for the project

- Project report.
- The report must clearly indicate which parts relate to the subject element 'Test'.
- The report must include reflections on the role of subject element 'Test' in the project as a whole.
- Maximum length for the complete report: 20 standard pages plus 10 standard pages per student, not including appendices.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

5.1.2 Exam procedure

The examination is an externally assessed group exam and will be graded according to the 7-point grading scale.

Examination type: A combination of the submitted group project and oral examination. The written and oral performances for the subject element 'Test' are assessed as a whole, leading to a single grade.

5.1.3 ECTS credits

The examination is worth 10 ECTS credits.

5.1.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the national subject element 'Test'.

The learning objectives are described in the national part of the curriculum.

5.1.5 Scheduled time

The exam will take place at the end of the first semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

5.1.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

5.1.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

5.2 The examination for the national subject element 'Databases for developers'.

5.2.1 Examination prerequisites

The project must be submitted not later than two weeks before the exam. The project must be prepared as an integrated report allowing the examination of the learning objectives for the subject elements 'Test' and 'Databases for developers'. The project is prepared by groups of two to four students or individually.

Formal requirements for the project report:

- Project report.
- The report must clearly indicate which parts relate to the subject element 'Databases for developers'.
- The report must include reflections on the role of the subject element 'Databases for developers' in the project as a whole.

- Maximum length for the complete report: 20 standard pages plus 10 standard pages per student, not including enclosures.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

5.2.2 Exam procedure

The examination is an externally assessed group exam and will be graded according to the 7-point grading scale.

Examination type: A combination of the submitted group project and oral examination. The written and oral performances for the subject element 'Databases for developers' are assessed as a whole, leading to a single grade.

5.2.3 ECTS credits

The examination is worth 10 ECTS credits.

5.2.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the national subject element 'Databases for developers'.

The learning objectives are described in the national part of the curriculum.

5.2.5 Scheduled time

The exam will take place at the end of the first semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

5.2.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

5.2.7 Study aids

All study aids are permitted. However, aids are not permitted during the oral exam.

5.3 The examination for the local subject element ‘Discrete mathematics’.

5.3.1 Examination prerequisites

Submission of two academically honest assignments not later than two weeks before the examination is to take place.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

5.3.2 Exam procedure

The examination is an individual internally assessed exam, graded according to the 7-point grading scale.

Examination type: Oral.

At the beginning of the exam, the student randomly chooses a topic from a selection of topics. The topics will have been published on the study programme's learning platform not later than two weeks before the exam is to take place. The student explains the topic, and an examination dialogue then takes place, which may involve all subjects related to the subject element.

5.3.3 ECTS credits

The examination is worth 5 ECTS credits.

5.3.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the local subject element ‘Discrete mathematics’.

The learning objectives for the subject element are described above.

5.3.5 Scheduled time

The exam will take place in the first semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

5.3.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

5.3.7 Study aids

The student's own notes.

5.4 The examination for the local subject element 'Investigation and professional communication'.

5.4.1 Examination prerequisites

Submission of an academic or subject-related article not later than two weeks before the exam is to take place.

Formal requirements to the academic or subject-related article

- The academic or subject-related article must describe an academic or subject-specific study and comply with the general formal requirements to academic and subject-related articles (e.g. problem statement, research method, results, conclusion and contextualisation and reference list).
- Max. 10 standard pages.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

5.4.2 Exam procedure

The examination is internally assessed according to the 7-point grading scale.

Examination type: Individual combination of a submitted article and an oral examination. The written and oral performances are assessed as a whole, leading to a single grade.

The student presents his/her article at the examination. Then an examination dialogue takes place, which may involve all subjects related to the subject element.

5.4.3 ECTS credits

The examination is worth 5 ECTS credits.

5.4.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the local subject element 'Investigation and professional communication'.

The learning objectives for the subject element are described above.

5.4.5 Scheduled time

The exam will take place in the first semester.
The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

5.4.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

5.4.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

6. 2nd semester

6.1 The examination for the national subject element 'Developing Large Systems'.

6.1.1 Examination prerequisites

The project report must be submitted not later than two weeks before the exam is to take place. The project must be prepared as an integrated report allowing the examination of the learning objectives for the subject elements 'Developing Large Systems' and 'System integration'. The project is prepared by groups of two to four students or individually.

Formal requirements for the project report:

- Project report.
- The report must clearly indicate which parts relate to the subject element 'Developing Large Systems'.
- The report must include reflections on the role of the subject element 'Developing Large Systems' in the project as a whole.
- Maximum length for the complete report: 20 standard pages plus 10 standard pages per student, not including enclosures.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

6.1.2 Exam procedure

The examination is an externally assessed group exam and will be graded according to the 7-point grading scale.

Examination type: A combination of the submitted written group project and oral examination. The written and oral performances for the subject element 'Developing Large Systems' are assessed as a whole, leading to a single grade.

6.1.3 ECTS credits

The examination is worth 10 ECTS credits.

6.1.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the national subject element 'Developing Large Systems'.

The learning objectives are described in the national part of the curriculum.

6.1.5 Scheduled time

The exam will take place at the end of the second semester.
The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

6.1.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

6.1.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

6.2 The examination for the national subject element 'System integration'.

6.2.1 Examination prerequisites

The project report must be submitted not later than two weeks before the exam is to take place. The project must be prepared as an integrated report allowing the examination of the learning objectives for the subject elements 'Developing Large Systems' and 'System integration'. The project is prepared by groups of two to four students or individually.

Formal requirements for the project report:

- Project report.
- The report must clearly indicate which parts relate to the subject element 'System integration'.
- The report must include reflections on the role of the subject element 'System integration' in the project as a whole.
- Maximum length for the complete report: 20 standard pages plus 10 standard pages per student, not including appendices.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

6.2.2 Exam procedure

The examination is an externally assessed group exam and will be graded according to the 7-point grading scale.

Examination type: A combination of the submitted written group project and oral examination. The written and oral performances for the subject element 'System integration' are assessed as a whole, leading to a single grade.

6.2.3 ECTS credits

The examination is worth 10 ECTS credits.

6.2.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the national subject element 'System integration'.

The learning objectives are described in the national part of the curriculum.

6.2.5 Scheduled time

The exam will take place at the end of the 2nd semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

6.2.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

6.2.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

6.3 The examination for the local subject element 'Security for developers'.

6.3.1 Examination prerequisites

Submission of a synopsis(' extended abstract') of a selected security topic not later than two weeks before the exam is to be held. The selected security aspect must be related to a specific development assignment.

Formal requirements to the synopsis

- Definition of the selected problem.
- Brief description of solution proposals.
- Contextualisation and conclusions.
- Maximum: 3 standard pages.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

6.3.2 Exam procedure

The examination is an individual internally assessed exam, graded according to the 7-point grading scale.

Examination type: Individual combination of a submitted synopsis and an oral examination.

The written and oral performances are assessed as a whole, leading to a single grade.

At the exam, the student presents the selected security aspect, his/her solution proposals and conclusions. The presentation must contain solution of a concrete and practice-related problem. Subsequently, an exam dialogue will take place based on the presentation, but other topics under the subject element may also be covered.

6.3.3 ECTS credits

The examination is worth 5 ECTS credits.

6.3.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the local subject element 'Security for developers'.

The learning objectives for the subject element are described above.

6.3.5 Scheduled time

The exam will take place in the second semester.
The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

6.3.6 Exam language

The exam is conducted in English.

6.3.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

6.4 The examination for the elective 'Individual study'

6.4.1 Examination prerequisites

Submission of an academic article not later than two weeks before the exam is to take place.

Formal requirements to the article

- The academic or subject-related article must describe an academic, IT-related subject and comply with the general formal requirements to academic and subject-related articles (e.g. problem statement, research method, results, conclusion and contextualisation and reference list).
- Max. 10 standard pages.

One standard page is 2,400 key strokes including spaces and foot notes.

If a student does not meet all the examination prerequisites, the student will have used an exam attempt and will then have two examination attempts remaining to pass the exam.

6.4.2 Exam procedure

The examination is internally assessed according to the 7-point grading scale.

Examination type: Individual combination of a submitted article and an oral examination.

The written and oral performances are assessed as a whole, leading to a single grade.

The student presents his/her article at the examination. Subsequently, an exam dialogue will take place based on the article, the presentation and the selected topic.

6.4.3 ECTS credits

The examination is worth 5 ECTS credits.

6.4.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the local subject element 'Individual study'.

The learning objectives for the subject element are described above.

6.4.5 Scheduled time

The exam will take place in the second semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

6.4.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

6.4.7 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

6.5 The examination for the elective 'Syntax and semantics'.

6.5.1 Examination prerequisites

None.

6.5.2 Exam procedure

The examination is internally assessed according to the 7-point grading scale.

Examination type: Individual, written.

6.5.3 ECTS credits

The examination is worth 5 ECTS credits.

6.5.4 Assessment criteria

The assessment criteria for the exam are the learning objectives for the local subject element ‘Syntax and semantics’.

The learning objectives for the subject element are described above.

6.5.5 Scheduled time

The exam will take place in the second semester.

The study programme may exempt individual students from the deadlines that have been set for passing the exam if the grounds for exemption are illness, maternity or paternity leave, or exceptional circumstances.

6.5.6 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

6.5.7 Study aids

One sheet of A4-sized paper with the student's own notes.

7. Internship

7.1 Internship requirements and expectations

During the internship, the student works on issues that are relevant to his/her profession while achieving knowledge of relevant work functions. The relationship between theoretical teaching and learning activities and the internship will be the starting point for the student's internship learning objectives.
Based on the internship learning objectives – see the national part of the Curriculum – the student and the supervisor/contact person will collaborate on defining specific objectives for the student's internship.

The objectives must be made in writing and saved in the student internship portal. These objectives will then guide how the student's work during the internship should be planned, including the writing of the student's internship report.

The internship should be considered similar to a full-time job with the same requirements in terms of number of working hours, effort, commitment and flexibility that a graduate can expect to meet in their first job.

The internship may be organised in a flexible and personalised manner and may form the basis of the student's bachelor's degree project.

7.2 Examination prerequisites

The project report must meet the formal requirements, and it must be submitted correctly and in due time.

If the student does not meet the examination prerequisites and/or the formal requirements, the student will have used an examination attempt. This means that two examination attempts remain for the student to pass the exam.

7.3 Formal requirements to the written internship report

- cover page, indicating name, place of internship, educational institution, internship period
- introduction, including a description of the internship company
- specific and detailed learning objectives based on the learning objectives of the national part of the Curriculum.
- description of specific duties
- conclusion, including reflections on the achievement of specific learning objectives in relation to duties
- reference list, if any, (including all sources that are referred to in the project report)
- appendices, including a statement from the internship company

The maximum allowed length of the internship report is 10 standard pages and it should deal with an academic issue related to the internship company. One standard page is 2,400 key strokes including spaces and foot notes. The cover page, table of contents, reference list and appendices do not count towards the maximum allowed length of the report. Appendices are not assessed.

The report must be written individually.

7.4 The internship examination

The internship period is finalized by an oral examination based on a written internship report.

Oral and written examination
The examination is oral and based on the written internship report. The oral exam by the student making a presentation. Subsequently, an examination dialogue will take place taking its starting point in the presentation and the submitted report as well as the learning objectives of the internship.

The examination is an individual internally assessed exam, graded according to the 7-point grading scale. The written report and the oral performance are assessed as a whole, leading to a single grade.

The examination is worth 15 ECTS credits.

7.5 Assessment criteria

The assessment criteria for the exam are the learning objectives for the national subject element 'Internship'.

The learning objectives are described in the national part of the Curriculum.

7.6 Scheduled time

The exam will take place in the third semester. Further information about the time, venue as well as submission of the written project report can be found on Pointer.

7.7 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

7.8 Study aids

All study aids are permitted. However, study aids are not permitted during the oral exam.

8. Bachelor’s degree project

For the requirements to the bachelor’s degree project as well as the related learning objectives, please see the national part of the Curriculum.

8.1 Formal requirements to the examination

The written project that makes up both the assessment basis and the examination basis must

- meet the formal requirements to the bachelor's degree project, see below.
- be submitted in due time, as per the exam plan on Pointer, and it must be uploaded to 'UC-Viden’.

The project report, which makes up the written element of the examination, must as a minimum contain the following:

- cover page with title
- table of contents
- introduction, including problem statement
- solution proposals, including choice of relevant theory and methodologies
- conclusions, including reflection and contextualisation
- reference list (including all sources that are referred to in the report)
- appendices (only include appendices that are key to the report)

The maximum allowed length of the report is 20 standard pages + 20 standard pages per student. The cover page, table of contents, reference list and appendices are not included in the required number of pages. Appendices are not assessed.

One standard page is 2,400 key strokes including spaces and foot notes.

late submission of the written project report, which makes up the written element of the examination, or non-compliance with the formal requirements means that the student will not be allowed to attend the examination and that one exam attempt will have been used.

The exam cannot take place until the internship exam and the other exams of the study programme have been passed.

8.2 Exam procedure

The examination is an externally assessed, oral examination based on the written project report. The written element of the bachelor’s degree project may be prepared individually or in groups of two to four students at the most.

The written report and the oral performance are assessed as a whole, leading to a single grade. The exam is assessed and graded according to the 7-point grading scale.

8.3 Spelling - and writing skills

Spelling and writing skills will be assessed as part of the assessment and grading of the written exam project. Spelling and writing skills may however only increase or decrease the student's grade by one grade at the most. The assessment expresses an overall assessment of the professional and academic content as well as the student's spelling and writing skills.

8.4 ECTS credits

The examination is worth 15 ECTS credits.

8.5 Assessment criteria

The assessment criteria are the learning objectives for the bachelor's degree project, see the national part of the Curriculum.

8.6 Scheduled time

The exam will take place at the end of the third semester of the study programme. Information about the time and venue for the exam can be found on Pointer.

8.7 Exam language

Exams are conducted in Danish for the Danish offers of the programme and in English for the English offers of the programme.

8.8 Study aids

All study aids are permitted. Study aids are not permitted for the oral part of the examination.

9. Subject elements that may be completed abroad

Each of the subject elements of the study programme may be completed abroad if a student applies for and is granted pre-approval of credit transfer by the study programme.

In cases of pre-approved study-abroad periods, the student has a duty to document completion of the subject elements, upon completion of the study-abroad period. When applying for pre-approval, the student must consent to allow the educational institution to collect any information required upon the student's completion of the study-abroad period.

On final approval of pre-approved credit transfer, the subject element is considered completed if it was passed according to the regulations governing the study programme.

UCN has a wide network of partner institutions abroad, and UCN International may help students who wish to complete part of their study programme abroad. Please contact UCN International for more information. However, please note that study-abroad periods require the student to perform a considerable amount of work. The individual student is responsible for finding out which subjects can be studied abroad etc. at the desired university. UCN International will offer advice and help to students, but the department will not go into the detailed planning of a study abroad period. This is the student's responsibility.

10. Withdrawal from exams

The rules for withdrawal from exams can be found at ucn.dk/english in the Examination Regulations for UCN's Undergraduate Programmes.

11. Applied teaching methods

UCN's study programs are based on Reflective Practice-based Learning (RPL), enabling the students to develop competences to act professionally in a changing world. Throughout the study programme, the student develops professional, social, and personal competences, which enables the student to relate theoretical reflection to practical actions, thus, taking into account the relevant theories, own experiences and prior knowledge.
In the study programmes, RPL promotes teaching and learning activities that link practical knowledge, theoretical knowledge and research-based knowledge. Six fundamental principles guide teaching and learning activities at UCN. The six fundamental principles aim to create constructive conditions for reflection to take place:

- Fundamental Principle No. 1: The students' own experiences are incorporated into teaching and learning activities
- Fundamental Principle No. 2: Teaching and learning activities are designed to include appropriate disturbances
- Fundamental Principle No. 3: Teaching and learning activities are organised as exploration
- Fundamental Principle No. 4: The content of teaching and learning activities is based on the good example
- Fundamental Principle No. 5: Lecturers and students work together on learning processes
- Fundamental Principle No. 6: Lecturers and students create room for dialogue

The six fundamental principles may unfold in different ways in different study programmes, semesters and subjects. Active participation and involvement in relation to the student's own and fellow students' learning is, however, a shared characteristic for all six fundamental principles.

On the Software Development programme, we use a wide range of teaching and learning methods that combined support the student in achieving the learning objectives described in this Curriculum.

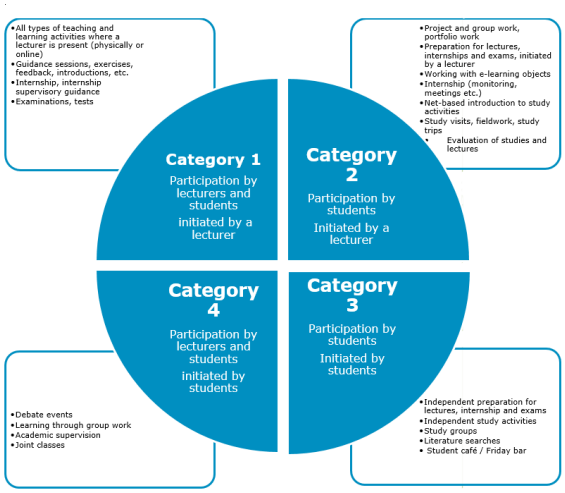
The teaching methods are based on Reflective practice-based learning. Reflective practice-based learning is based on the assumption that the ability to reflect on practical and academic knowledge is decisive in the student's participation in developing the profession. Reflection takes place in the individual alone and in relations with others. The learning approach is based on the close connection between the student's academic, practical, social and personal acquisition of knowledge, skills and competencies. The learning approach prepares UCN's graduates for acquiring new knowledge, skills and competencies to qualify and develop practice.

The main teaching and learning activities are dialogue-based class instruction; resolution of assignments and project writing, individually and in groups; study group work; independent study; groups making presentations to the whole class, interdisciplinary theme periods and much more. In addition, we also use digital didactic methods such as *flipped classroom*.

Common to all these activities is that the study programme always tries to define (or helps students define) clear objectives for the learning activities.

The expected distribution of learning activities for the entire study programme as well as for individual educational components is described in the *Study Activity Model*, which can be found at ucn.dk/english.

The Study Activity Model



According to the Ministry of Higher Education and Science, a student must achieve '30 ECTS credits worth of learning' per semester. One ECTS credit equates to approx. 27 student working hours. Therefore, for the syllabus, features an overview of the anticipated workload for the various course units/study activities.

Furthermore, we offer different activities that may help promote learning in the individual: individual guidance sessions and coaching. During lessons we focus on the working processes in software development to support your development of the skills and competences of the profession.

In addition to having IT-specific knowledge, our teaching and learning activities reflect that a Bachelor of Software Development should have achieved the following learning objectives:

- Learning competency: *"(...) be able to identify his/her own learning needs and develop his/her knowledge and skills through the profession (...)",* and
- Communication skill: *"(...) have an ability to communicate practice-oriented and technical problems and solutions to partners and users. (...)"*

(The Ministry of Higher Education and Science: The Danish Qualifications Framework[1].)

12. Obligation to participate and obligation to attend

Active participation in teaching and learning activities are important for achieving a good outcome. There is no obligation to attend as such, but the study programme does monitor absence in the first and second semesters and will offer help and guidance sessions as early as possible if it is deemed that the extent of the absence is too large.

In order for the student to achieve the learning objectives and learning outcomes of the study programme and for the associated forms of teaching and learning to work, it is also important to clarify that the student is subject to an obligation to participate in the form of submission/presentation of assignments/projects etc. This will be expressed as an examination prerequisite.

[1] http://ufm.dk/uddannelse-og-institutioner/anerkendelse-og-dokumentation/dokumentation/kvalifikationsrammer/andre/dk-videregaaende/kvalifikationsramme_dk_videregaaende_uddannelse_20080609.pdf

Non-compliance with the obligation to participate (e.g. if a written assignment is not submitted, or non-compliance with formal requirements to written assignments) means that the student will have used an exam attempt. Subsequently, the student will only have two attempts remaining to pass the exam.

The study programme will offer help and guidance sessions as early as possible if a student is neglecting his/her obligation to participate and/or is frequently absent.

12.1 Academic supervision

Students who find it difficult to meet the obligation to participate can talk to the student advisor belonging to the study programme. Students can also turn to the student advisor if they have questions about the design and course of studies, periods abroad etc. Find contact information for your student advisor at www.ucn.dk/english.

12.2 Lecturers as supervisors

The lecturers on the study programme often act as supervisors to the students when it comes to: Study activities such as project work.

We provide supervision because we want to:

- Support the development of a good and stimulating learning environment
- Support social learning processes and constructive collaboration
- Support innovation and development
- Support that study groups gradually take over the functions of the supervisor at a pace that matches the group's competencies.

Generally, the supervisor will focus on project writing periods and the learning process with particular focus on

1. the contents of the project.
2. working methods and processes.
3. group dynamics and processes.
4. learning and metacognition.

13. Criteria for assessment of study activity

Enrolment will be terminated for students who have not passed at least one exam over a continuous period of at least one year (non-compliance with study activity requirements).

Periods during which a student has not been actively studying due to leave of absence, maternity or paternity leave, adoption of a child, verified illness or military service do not count as non-compliance with study activity requirements. On request, the student must provide documentation of such matters.

The study programme may grant an exemption from these provisions in exceptional circumstances. An exemption application should be submitted to the programme director.

The student will be informed in writing before enrolment is terminated. In connection with such notification, the student will be made aware of the above-mentioned rules.

14. Credit transfer for subject elements

Credit transfer evaluations take place in different situations.

14.1 Subject elements from the same study programme passed at another educational institution

Passed subject elements are equivalent to corresponding subject elements offered by other educational institutions providing the same study programme.

14.2 Credit transfer assessment (compulsory credit transfer) related to applications for admission/enrolment on a study programme

When a student has met his/her duty to disclose information about passed subject elements from another Danish or foreign higher education programme and about his/her work experience, which may be assumed to be worth transfer credit, the study programme will decide whether to grant transfer credit in each individual case. Transfer credit will be granted for passed educational components and work experience that can be equalled to course units, elements of a study programme or parts of an internship. The decision to award transfer credit is based on an academic assessment.

14.3 If a student has not met his/her duty to disclose information about prior education and work experience

If the duty to disclose information about prior education and work experience was not met when the student applied for admission/enrolment, the student may subsequently submit a new application for credit transfer. Such new applications for credit transfer are assessed twice a year (in July and January respectively in the context of the start of studies) to determine whether credit transfer should be granted.

This can mean that the student will have to wait longer than anticipated to receive a decision concerning credit transfer. It is therefore the student himself/herself who runs the risk of a decision concerning credit transfer not being made before the exam concerned.

- *IF the student does not sit the exam*, and UCN subsequently decides NOT to grant the student transfer credit, the student will have used one exam attempt.
- *IF the student decides to sit the exam before UCN has made a credit transfer decision*, and if UCN would have granted credit, then transfer credit will NOT be awarded as the student had decided to sit the exam. In this instance, the grade from the 'new' exam will be applicable irrespective of whether the 'old' exam grade – which might have been worth transfer credit if the student had applied for it in due time – is higher than the 'new' exam grade, and irrespective of whether the student passed the 'new' exam.

Once the student has decided to sit an exam, this will exclude the possibility of awarding transfer credit after the application has been processed, even in cases where transfer credit would have been awarded.

14.4 Pre-approval of credit transfer and final credit transfer

Before a student leaves UCN for another educational institution in Denmark or abroad, the student must submit an application for pre-approval of credit transfer for the purpose of achieving credit transfer for a subject element from this UCN Curriculum.

Pre-approval of credit transfer is done by UCN.

When the student has successfully completed the subject element requested, and once the application for final credit transfer has been received with the appropriate documentation, final credit transfer will be granted.

If the student has not completed the subject element requested, the student must attend an exam according to the regulations for that subject element as set out in this Curriculum.

For an in-depth description of the rules, see the current Regulations for UCN's Undergraduate Programmes.

15. Languages

The teaching materials are all in English and the lessons are taught in English. Exams are conducted in English.

15.1 Examination language

Please see the description at each individual exam.

16. Re-sits and illness re-sits

The rules and regulations for re-sit exams and re-sit exams due to illness (illness re-sit exams) can be found at ucn.dk/english in the Examination Regulations for UCN's Undergraduate Programmes.

17. Study aids

Any rules on the restricted use of study aids will be described under each examination.

18. Special exam arrangements

Students may apply for special exam arrangements if a physical or mental impairment qualifies them to do so. The application should be submitted to the study programme not later than four weeks before the exam is to be held. The application deadline may be waived in cases of sudden health-related problems. The following should be enclosed with the application: a medical certificate; a statement from e.g. a speech, hearing, dyslexia or blind institute or other evidence of the student's condition or relevant specific disability or impairment.

If the examination language is Danish:

Students whose mother tongue is not Danish may apply for permission to bring dictionaries to exams where study aids are not permitted.

Applications for permission to bring other study aids must be submitted to the programme not later than four weeks before the exam is to be held.

19. Academic misconduct at exams

When submitting a written exam answer paper, an examinee must confirm by signature that the paper was written without undue help.

19.1 Use of one's own work and the work of others – plagiarism

The rules for the use of one's own work and the rules against using other people's work as one's own (plagiarism) can be found at ucn.dk/english in the Examination Regulations for UCN's Undergraduate Programmes.

19.2 Disciplinary actions in events of academic misconduct and disruptive behaviour during examinations

The rules on disciplinary actions in events of academic misconduct and disruptive behaviour at examinations can be found at ucn.dk/english in the Examination Regulations for UCN's Undergraduate Programmes.

20. Complaints about exams and appeals of decisions

The rules on complaints about exams and appeals against decisions can be found at ucn.dk/english in the Examination Regulations for UCN's Undergraduate Programmes.

21. Exemption

The educational institution may grant exemption from those rules in this part of the Curriculum that were laid down solely by the educational institutions on the grounds of exceptional circumstances. The educational institutions co-operate on a uniform exemption practice.

22. Selection criteria

If we receive more applications than the number of available places, we will assess your academic, general and special qualifications, with particular emphasis on the following criteria (order is not prioritized):

- The grade from your qualifying exam (Computer science)
- The grade average from your Programming exam, your System development exam and your specialisation exam
- Your previous experience relevant to the study programme

23. Effective date and interim provisions

This institutional part of the Curriculum will come into effect as of 1 February 2019 and will apply to all students who are registered for the programme as of that date.

The 2017 curriculum (institutional part) will be repealed as of 1 February 2019 . This however does not apply to examinations under the 'old' curriculum that have commenced before the date of repeal.