

**Curriculum  
for  
the Bachelor's Degree  
Programme  
in  
Software Development**

**September 2012**

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## **Joint section**

### **1. Background and framework**

This joint section of the curriculum for the Bachelor's Degree Top-up Programme in Software Development was jointly prepared by the institutions that offer the programme and applies to all approved providers of this study programme.

The curriculum was prepared according to the framework set out in current legislation.

### **2. Purpose**

The purpose of the Bachelor's Degree Programme in Software Development is to qualify the graduated student to act independently as an IT specialist with focus on integration and architecture and to qualify him/her to take part in professional collaboration on development of large distributed IT systems in IT organisations, IT consulting agencies or internal IT development departments.

The programme will also qualify graduates to continue relevant education on master's level.

### **3. Programme workload**

The programme is a full-time study and is equal to 1.5 years of work for a full-time student. A

student full time equivalent is the workload of a full-time student in one academic year.

This means that 1 student full time equivalent corresponds to 60 ECTS credits under the European Credit Transfer System. Thus, the programme has a total workload of 90 ECTS credits.

### **4. Title**

Students who complete and pass the programme have a right to use the title **Bachelor of Software Development**. The Danish title is **Professionsbachelor i Softwareudvikling** (PBA Softwareudvikling).

### **5. Access to the programme**

The Bachelor's Degree Programme in Software Development is a second cycle (or top-up) programme designed for graduates of Computer Science, which means that graduates of that programme are qualified to get access to the top-up programme.

## **6. Overall programme learning goals**

### **Knowledge:**

The goal is that the graduated student will have achieved knowledge of:

- the strategic role of testing in system development,
- globalisation of software production,
- system architecture and understanding of its strategic importance to a company's business
- applied theories, methods and common technologies within the field and
- the connections between applied theories, methods and technologies and that the student is able to reflect on their suitability in various situations.

### **Skills**

The goal is that the graduated student will have achieved the skills to:

- integrate IT systems and develop systems that support future integration,
- use contracts as a tool for management and co-ordination in the development process,
- assess and select database systems as well as design, redesign and optimise databases,
- plan and manage development processes with many geographically dispersed team members and
- determine and apply a relevant degree of formality in internal communication and co-ordination in development projects.

### **Competencies**

The goal is that the graduated student will have achieved the competencies to:

- be in charge of planning and running tests in large IT systems,
- participate professionally in collaboration on large-scale systems using common methods and technologies,
- familiarise himself/herself with new technologies and standards for handling integration between systems,
- develop his/her own competency profile from being primarily a back end developer to handling tasks as a systems architect and
- be in charge of determining and implementing an architecture for large-scale systems that is suitable both in terms of business and technology

These overall goals are translated into a number of subsidiary goals for the knowledge, skills and competencies that are described in more detail under the individual modules of the study programme

## **7. The structure, core areas and compulsory educational elements of the study programme**

The bachelor programme is made up of modules and consists of:

- Compulsory modules (40 ECTS)
- Elective modules (20 ECTS)
- Internship (15 ECTS)
- Final bachelor degree project (15 ECTS)

### **Compulsory modules**

Together, the compulsory modules span the subject area and provide the student with relevant competencies.

These modules are closely connected which is why individual modules make sense through the whole that they form part of, i.e. the total of the modules.

The student will be able to shape his/her education in different ways depending on his/her choice of modules.

The modules are:

- Systems integration (10 ECTS)
- Large-scale system development (10 ECTS)
- Testing (10 ECTS)
- Contract-based programming (10 ECTS)
- Databases for developers (10 ECTS)

The institutional section will define which modules will be offered as compulsory modules and which will be offered as elective modules.

Furthermore the institution will offer elective modules worth 10 ECTS.

## 8. Learning goals for the educational elements

### Compulsory modules

#### Testing (10 ECTS)

##### Purpose

The purpose of the module is to qualify students to plan and carry out tests. Furthermore, the student will be able to see the strategic role of the test in the overall development process and be in charge of internal quality assurance of a project.

##### Goals

##### Knowledge

The goal is that the graduated student will have achieved knowledge of:

- important testing strategies and models and their role in the system development process,
- tests as an integrated part of a development project,
- various kinds of tests and their use.

##### Skills

The goal is that the graduated student will have achieved the skills to:

- plan the course of a test based on a test model,
- use black-box as well as white-box testing,
- use techniques for verification and validation,
- ensure traceability between system requirements and tests on all levels,
- use tests as part of the quality assurance in the project
- devise tests that can be used to verify that contracts are met, including internal contracts between subsidiary systems
- use techniques and tools for automating various kinds of tests
- build systems for running and managing the testing and debugging processes in development projects

##### Competencies

The goal is that the graduated student will have achieved the competencies to:

- select and apply a test strategy, a test model and test techniques that are appropriate to the applied development model
- plan and manage the execution of internal as well as external system tests

- design a test with relevant test coverage
- define principles for system design that contribute to making the system testable

## **Systems integration (10 ECTS)**

### **Purpose**

The purpose of the module is to qualify the student to perform technical integration of systems. After completion of this module, the student should be able to (1) integrate existing systems, (2) integrate existing systems in the context of development of new systems and (3) develop new systems that underpin future integration.

### **Goals**

#### **Knowledge**

The goal is that the graduated student will have achieved knowledge of:

- business-related considerations in the context of systems integration
- standards and standardisation organisations
- techniques used in connection with data conversion and migration
- the service concept and understand its relation to service-oriented architecture
- technologies to implement a service-oriented architecture
- similarities and differences between object-oriented and service-oriented architectures
- integration tools

#### **Skills**

The goal is that the graduated student will have achieved the skills to:

- use an object-oriented system in a service-oriented architecture
- design a system that is easy to integrate with other systems and that use existing services
- transform or expand a system to allow it to function in a service-oriented architecture
- use patterns that support systems integration
- develop add-on modules for generic systems
- integrate generic as well as other systems

#### **Competencies**

The goal is that the graduated student will have achieved the competencies to:

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- choose between different integration methods
- translate elements of a business strategy into specific requirements to systems integration
- adapt a system development method to underpin systems integration
- acquire knowledge about the development of integration standards

## **Contract-based programming (10 ECTS)**

### **Purpose**

The purpose of this module is to qualify the student to use contracts in various abstraction layers and to various degrees of formality in connection with the development of large-scale systems.

### **Goals**

#### **Knowledge**

The goal is that the graduated student will have achieved knowledge of:

- the importance of separating specification and implementation
- the connection between contracts and verification that contracts are fulfilled
- practical contract-based programming
- tools that support contract-based programming and design
- fundamental mathematical structures (sets, multisets, functions and relations)
- mathematical methods of proof
- program assertions, partial as well as total correctness

#### **Skills**

The goal is that the graduated student will have achieved the skills to:

- work out and write up functional specifications
- specify parts of a system as well as sub-systems and program modules
- apply contracts to models
- implement parts of a system based on contracts
- use contracts at different abstraction levels and levels of formality and handle context and transformation
- write contracts expressed in predicate logic
- use contracts to verify program elements
- use contracts as an integrated part of the development process
- use contracts when splitting, coordinating and integrating large systems
- assess the degree of formality that will be suitable in various contexts

#### **Competencies**



The goal is that the graduated student will have achieved the competencies to:

- use contracts in cross-cultural, global development projects
- contribute to introduce the use of contracts in development projects
- acquire knowledge and skills within software development that requires knowledge of mathematical concepts and structures.

## **Large-scale system development (10 ECTS)**

### **Purpose**

The purpose of this module is to qualify the student to work in development large-scale systems, meaning that after completing the module, the student should be able to plan and manage development processes with many participants and be able to design and implement large systems that are divided into smaller parts and developed by independent developer teams.

### **Goals**

#### **Knowledge**

The goal is that the graduated student will have achieved knowledge of:

- problems associated with managing large-scale projects
- techniques for managing large-scale projects
- the roles involved in large-scale development projects
- the challenges related to distributed systems development across organisations or borders
- quality assurance systems used to measure and ensure quality
- various techniques that can be used for deployment of large systems
- deploying a system in a technically distributed environment (moving from development environment to production environment)

#### **Skills**

The goal is that the graduated student will have achieved the skills to:

- write requirements between subsystems
- assure the quality of requirement changes across subsystems using documentation, including traceability
- use architecture-level patterns and frameworks in design and implementation of large-scale systems
- split a software system into subsystems
- apply and develop components with a view to reusability
- specify the interaction between subsystems on an abstract level
- use techniques for configuration management (version management, document management and release management)

- use a professional multi-user development environment
- use techniques for internal quality assurance between development teams
- use techniques for management of changes in requirements between subsystems

### **Competencies**

The goal is that the graduated student will have achieved the competencies to:

- assume and fill a specific role in a development team
- adapt a development method to large-scale development
- take part in cross-cultural, global development projects.

### **Databases for developers (10 ECTS)**

#### **Purpose**

The purpose of this module is to qualify the student to select and use various kinds of databases suitably in the context of different usage domains. After completion of the module, the student will furthermore be able to analyse and perform work on large databases, including redesign and optimisation.

#### **Goals**

#### **Knowledge**

The goal is that the graduated student will have achieved knowledge of:

- various database types and their underlying models
- the storage structure and query processing of a specific database system
- the optimisation possibilities for a specific database system, including pros and cons and any trade-offs
- security issues that are specific to databases and their solutions
- an administration tool used for monitoring and optimising a specific database
- the special issues that many concurrent transactions raise, including in connection with the web and distributed databases
- relational algebra

#### **Skills**

The goal is that the graduated student will have achieved the skills to:

- transform logic data models into physical models of various kinds of databases
- carry out database optimisation
- use the security system of a specific database system

- use parts of the administration tool for optimisation and tuning of existing databases
- use the tools of a specific database system to handle concurrent transactions
- use the facilities and programming options made available by a modern DBMS
- use an object-relational mapping tool
- use relational algebra to understand optimisation possibilities

### **Competencies**

The goal is that the graduated student will have achieved the competencies to:

- analyse the usage domain with a view to choosing a database type

## **9. Internship (15 ECTS)**

### **The course of the internship**

The internship may be completed in one or more organisations where the student will take part in and acquire knowledge of relevant tasks and jobs of the profession. The internship may be organised in a flexible, varied manner and should be suitable to act as the foundation of the student's final bachelor degree project.

The purpose of the internship is to give the student the opportunity to put the learning outcomes of the first to semesters into practice by acting under job-like conditions in a company and job that are relevant to the profession.

### **Internship learning goals**

- Gaining an insight into the requirements and expectations that companies have to the knowledge,
- skills and work attitudes of graduates of Software Development.
- Experiencing everyday work life and tasks over an extended period in the profession.
- Working with development assignments in practice according to the student's learning goals.
- Putting the knowledge and skills that were achieved on the bachelor's degree programme into practice.
- Gaining experience of different working methods and tools for carrying out specific tasks.

Furthermore perhaps even:

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- Generating ideas for a bachelor degree project and finding a possible partner company for the project.

## **10. Final bachelor degree project (15 ECTS)**

In the final bachelor degree project, the student must demonstrate the ability to analytically and methodically process a complex, practice-related problem or issue related to a specific IT task. The final bachelor degree project must include topics that are central to the education.

### **Prerequisites**

The student must have passed all prior examinations to be eligible to register for the final bachelor degree project.

### **Contents**

The problem statement for the final bachelor degree project must be prepared by the student in collaboration with a company. The problem statement must be approved by the educational institution.

When solving the problem set out in the problem statement, it is of the essence that the student is able to apply central theories and methods.

The educational institution will prepare more in-depth guidelines with the formal requirements to the project.

## **11. Module order**

Since there is no progression between the modules of the programme, a specific order has not been fixed.

## **12. Programme exams**

### **Module examinations**

To prove that the student has achieved the learning goals fixed for each module in the programme, the student must take an exam after completing each module.

In the first academic year, the student will take six modules. At least 3 modules must be externally assessed. The educational institution will inform the student about which modules will be externally assessed.

The remaining modules will be internally assessed.

The internal examination types and their examination bases are indicated in the institutional section of this curriculum.

For a student to be eligible to attend the final degree project exam, he/she must have passed all other exams.

The obligation to participate including the obligation to attend may be prerequisites of exam attendance.

The obligation to participate and the obligation to attend are described for each exam in the curriculum. Any prerequisites to the exams will also be stated in the curriculum.

The following applies to each externally assessed examination:

The examination basis:                      The specific module in question.

Examination type:                              Oral, individual examination.

Extent:    30 minutes, including assessment. Each educational institution will decide on the terms for the examination, including whether students must pick a question, whether any preparation time will be allowed etc.

Assessment:                                        The 7-point grading scale.

### **The internship examination**

*Internally assessed, individual examination.*

Examination basis: As described in the institutional section of this curriculum.

Examination type: Pass/fail.

### **Final bachelor degree project examination**

The topic of the final degree project will be expressed in the problem statement by the student in collaboration with the institution and a company insofar as this is possible. The institution must approve the problem statement.

The final bachelor degree project examination is externally assessed, and consists in an assessment of the documented project deliverables and their oral defence.

If the final bachelor degree project is not passed, the student may hand in a supplement to the original project report for the resit examination.

The final bachelor degree project must demonstrate that the student has achieved the programme's learning goals and the expected level of graduate competence.

The final bachelor degree project will be carried out by groups of up to, usually, 3 students. The institution must approve every student's choice of working alone or in a group.

The documented project deliverables must be submitted in 3 copies to the institution in the form of a report and any products. The report may be up to 40 standard pages in length excluding appendices, with the addition of 20 pages per student. The product may be e.g. a program. The report will be assessed individually which means that it must be clear which students are responsible for the individual sections of the report. At the individual oral examination, the entire project will form the basis of the exam.

The bachelor degree project examination will be an individual, oral defence of 30 minutes' duration.

For the oral part of the examination, the student(s) will make a joint presentation of the project of approx. 10 minutes' duration per student.

Next, each student will be examined individually for approx. 20 minutes. Each student will receive an individual, total grade based on the assessment of the project and the oral exam.

### **13. Examination regulations**

#### **Withdrawal from exams**

The deadline for due withdrawal from exams is 14 days before the exam is to be held or before the submission deadline for written work when that written work is part of the examination basis or the assessment basis. A withdrawal notice must be given to the programme.

If a withdrawal notice is not presented in due time, the exam will be considered started and will count against the student's number of exam attempts, cf. the executive order on examination regulations, s. 6.

This shall not apply if the student is prevented from participating in exams because of (verified) illness, cf. the executive order on examination regulations s. 7.

Students cannot withdraw from exams that takes place immediately after the instruction period and that are scheduled to take place in the first academic year according to the executive order on examination regulations / the curriculum as students must sit these exams before the first academic year elapses.

### **Illness resit exams**

A student who was prevented from attending an exam owing to verified illness or other unforeseen reason will be able to resit the (illness resit) exam as soon as possible. If the exam takes place in the final exam term, the student will have the opportunity to sit the exam in that exam term or immediately after the term.

An illness resit exam will not feature an assignment that is identical to that of the missed exam. It is the student's responsibility to stay informed on when (illness) resit exams will be held.

Illness must be verified by a doctor's note. The educational institution must receive the doctor's note within three working days after the exam was held. Students who suddenly become ill during an exam must submit verification that they were ill on the day in question.

If illness is not verified according to the above rules, the student will have spent an exam attempt.

It is the student's responsibility to cover the expense of the doctor's note.

#### **Withdrawal from illness resit exams**

Withdrawal from an illness resit exam follows the same rules as withdrawal from regular exams.

The educational institution may disregard withdrawal deadlines in cases of extraordinary circumstances.

### **Study aids**

Any rules governing study aids will be mentioned in the description of the individual exam.

### **Examination language**

Exams must be conducted in understandable Danish/English.

Students whose mother tongue is not Danish/English may apply for an exemption from the requirement that spelling and writing skills form part of the assessment criteria for the professional bachelor's degree project or the academy profession degree project as well as exams in which such skills are stated in this curriculum to be part of the assessment criteria. The application must be submitted to the programme not later than 4 weeks before the exam is to take place.

### **Special exam conditions**

Students may apply for permission to use a PC for written exams that take place at the institution if the application is verified by physical or mental impairment. The application should be submitted to the programme not later than 4 weeks before the exam is to be held. The application deadline may be extended in cases of sudden health-related problems. With the application you should enclose a doctor's certificate/note; a statement from e.g. a speech, hearing, dyslexia or blind institute or other evidence of your health condition or a relevant specific impairment.

[If the examination language is Danish]

Students whose mother tongue is not Danish may apply for permission to bring dictionaries to exams.

[If the examination language is English]

Students whose mother tongue is not English may apply for permission to bring dictionaries to exams.

Applications for permission to bring other study aids must be submitted to the programme not later than 4 weeks before the exam is to be held.

### **Academic misconduct at exams**

When handing in a written exam assignment, the student must confirm by signature that the assignment was prepared without undue help.

#### *Use of your own and others' work - plagiarism*

Academic misconduct at exams in the form of plagiarism are instances where a written assignment, in full or in part, appears to have been made by the student or students themselves, even though the assignment:

1. includes identical or near-identical wording of other people's statements or works where the text is not set off by the use of quotation marks, italics, indentation or any other clear indication with a reference to the source, cf. UCN's requirements to written work



2. includes substantial sections of text that are so similar to another work in wording etc. that by comparison it is clear that the sections could not have been written without the use of the other work.
3. includes the use of other's words or ideas without giving due credit to the sources.
4. re-uses text and/or central ideas from your own previously assessed works without observing the stipulations in sections. 1 and 3.

*Disciplinary actions in events of academic misconduct and disruptive behaviour*

During exams

A student who

- unduly obtains help, or
- helps another student answer an assignment, or
- uses non-authorised aids

and

a student who

- behaves in a disruptive manner

at an exam may be expelled from the exam room while the exam is taking place by the programme director, a person authorised by him/her, or jointly by the assessors. In such cases, the justification of the expulsion will be assessed in connection with the subsequent decision on the sanctions to be imposed.

In cases of less serious disturbing behaviour, students will first be given a warning.

*Suspected academic misconduct at exams including plagiarism, during and after the exam*

If during or after an exam, a student is suspected of

- having obtained or provided undue help,
- passing off another person's work as their own (plagiarism), or
- having used his/her own previously assessed work or parts of it without reference (plagiarism)

this will be reported to the relevant programme.

The process of identifying academic misconduct including plagiarism

*Suspension of the exam*

If the reported misconduct regards plagiarism in a written assignment that is to make up the basis of assessment for a subsequent oral exam, the programme director will suspend the exam if the matter cannot be settled before the fixed examination date.

*Form and contents of the report*

Misconduct must be reported without undue delay. The report must include a written presentation of the case with information to identify the reported persons, as well as a brief account of the matter and the existing evidence. Previous incidents of academic misconduct by one or more of the reported students must be stated explicitly.

When plagiarism is reported, the copied sections must be clearly indicated and a reference to their sources stated. The copied text must also be indicated in the source text.

*Involving the student - hearing of the parties*

The programme director decides whether the hearing of the student will be oral, in writing or a combination.

For an oral hearing, the student will be summoned for a discussion for further clarification of the case where he/she will be presented with the documentation of the assumption of academic misconduct and where he/she will be able to state his/her point of view. The student has a right to attend with a companion.

For a written hearing, the documentation of suspected academic misconduct will be sent to the student requesting him/her to state his/her point of view in writing.

Sanctions against academic misconduct and disruptive behaviour during exams

If the suspected misconduct is confirmed after the matter has been investigated, and if the misconduct has had or will be able to have an influence on the assessment of the student's performance, the programme director will expel the student from the exam.

In less serious offences, the student will first receive a warning.

In aggravating circumstances, the programme director may suspend the student for a period of time at the programme director's discretion. In such cases, the student will receive a written warning that any further instances of misconduct may lead to permanent expulsion.

A period of suspension means that any grades awarded for the exam in question will be annulled, and that the student will have spent an exam attempt.

The student will not be allowed to resit the exam and will have to wait until the ordinary exam in that particular module/course is offered again.

In cases of aggravating circumstances, the programme director may decide to suspend the student from studies for a period of time at the programme director's discretion. In such cases, the student will receive a written warning that any further instances of misconduct may lead to permanent expulsion.

The student cannot participate in lectures or exams while being suspended.

Complaints

The decision that a student is suspended and has spent an exam attempt is final and cannot be brought before a higher administrative authority.

Complaints on the grounds of legal irregularities (e.g. legal incapacity, the hearing procedure, guidelines on making complaints, correct interpretation of the executive order on examination regulations etc.) may be brought before the Danish Agency for Higher Education and Educational Support. The complaint must be brought before the institution and directed to the attention of the relevant programme director who will make a statement. The student will have the opportunity to comment on the statement, the deadline being usually one week. The institution will submit the complaint, the statement and any comments made by the student to the Danish Agency for Higher Education and Educational Support. The deadline for complaints made to the institution is 2 weeks from the day the student was notified of the decision, cf. the examination regulations section 50.

### **Spelling and writing skills**

Spelling and writing skills will be part of the assessment criteria for the professional bachelor degree project, the academy profession degree project and the exams in which those skills are part of the assessment criteria as stated in this curriculum.

The assessment is expressed as an overall assessment of the professional and academic content as well as the student's spelling and writing skills.

Students may apply for an exemption from the requirement that spelling and writing skills form part of the assessment criteria if the application is verified by physical or mental impairment. The application should be submitted to the programme and directed to the attention of the programme director not later than 4 weeks before the exam is to be held.

### **Complaints about exams and appeals against decisions**

#### *Complaints about exams*

Students are recommended to seek guidance from the student counsellors in connection with the complaints procedure and writing a complaint.

The regulations for complaints about exams can be found in s. 10 of the executive order on examination regulations.

The Executive Order divides complaints into two kinds,

1. complaints about the examination basis etc., the course of the exam and/or the assessment, and
2. complaints on the grounds of legal irregularities.

The two kinds of complaints are dealt with differently.

*Complaint about the examination basis etc. the course of the exam and the assessment*  
Within 2 weeks after the assessment of the exam has been announced in the usual way, a student may submit a written, substantiated complaint about:

1. the exam basis including the exam questions, assignments etc. and its connection to the purpose and requirements of the programme
2. the examination procedure
3. the assessment

The complaint may concern any exam including written examinations, oral examinations and combined exams as well as practical, clinical or laboratory exams.

The complaint should be submitted to the relevant programme director.

The complaint will immediately be brought before the original assessors, i.e. the examiner and the external examiner from the exam in question. The statement made by the assessors must be usable as the base of the institution's decision on academic/professional matters. The institution will usually give the assessors a deadline of 2 weeks to make their statements.

Immediately after the statements are made available, the student will be given the opportunity to comment on them within, usually, one week.

The decision will be made by the institution based on the academic/professional statements made by the assessors and any comments made by the student.

The decision must be made in writing and must be substantiated. It may regard

1. an offer of a new assessment (re-assessment). This only applies to written examinations
2. an offer of a new examination (resit)
3. a dismissal of the complaint

If it is decided that the student will be offered re-assessment or a resit exam, the programme director will appoint new assessors. Re-assessment may only be offered in cases of written exams where written material exists for assessment, as new assessors will not be able to (re-)assess an already held oral exam and as the notes of the original assessors are personal and cannot be passed on to others.

If the decision is to offer the student a re-assessment or resit exam, the student must be notified that a re-assessment or a resit exam may result in a lower grade. The student must accept the offer within 2 weeks of the announcement of the decision. Acceptance of an offer of re-assessment or resit exam cannot be cancelled. If the student does not accept the offer within the deadline, re-assessment or a resit exam will not be carried out.

Re-assessment or a resit exam must take place as soon as possible.

On re-assessment, the assessors must be presented with the case documents: The exam paper, the student's assignment, the statements made by the original assessors with the comments made by the student, and the decision made by the institution.

The assessors will deliver the result of the re-assessment including a written explanation and their assessment. Resit exams and re-assessments may result in lower grades than the initial grades.

If it is decided that a re-assessment or resit exam will be offered, the decision will apply to all students who took the exam in question if their assignment features the same deficiency as the one being complained about.

The complaint must be submitted to the programme director not later than 2 weeks (14 calendar days) after the assessment results of the exam in question have been announced. If the deadline falls on a holiday, the deadline will be extended to expire on the first weekday after that day.

In extraordinary circumstances, the deadline may be disregarded.

### *Appeals*

The appellant may bring the institution's decision on academic/professional matters before an appeals board. The activities of the appeals board fall under the Danish Public Administration Act including the stipulations on legal incapacity and the duty of silence.

The appeal should be submitted to the programme director.

The deadline for appeals is two weeks after the student has been notified of the decision. The above-mentioned requirements to complaints (being in writing, substantiated etc.) also apply to appeals.

The appeals board is made up of two appointed external examiners who will be appointed by the chairman of the external examiners, one examiner and a student within the same field (from the study programme) both appointed by the programme director.

The appeals board will make a decision based on the material that formed the base of the institution's decision and the student's substantiated appeal.

The appeals board will process the appeal, and the decision may regard

1. an offer of a new assessment (re-assessment) made by new assessors. This only applies to written examinations
2. an offer of a new examination (resit) with new assessors, or
3. a dismissal of the complaint

If the decision is to offer the student a re-assessment or resit exam, the student must be notified that a re-assessment or a resit exam may result in a lower grade. The student must accept the offer within 2 weeks of the announcement of the decision. Acceptance of an offer of re-assessment or resit exam cannot be cancelled.

If the student does not accept the offer within the deadline, re-assessment or a resit exam will not be carried out.

Re-assessment or a resit exam must take place as soon as possible.

On re-assessment, the assessors must be presented with the case documents: The exam paper, the student's assignment, the statements made by the original assessors with the comments made by the student, and the decision made by the institution.

The appeals board must have made a decision not later than 2 months, 3 months for summer exams, after the appeal was made.

The decision of the appeals board is final meaning that the case cannot be brought before a higher administrative authority regarding the parts of the appeal that concern academic/professional elements.

#### *Complaints on the grounds of legal irregularities*

Complaints on the grounds of legal irregularities in decisions made by the assessors in connection with re-assessment or resit exams or the appeals board's decisions may be brought before University College of Northern Denmark within 2 weeks of the day the student was notified of the decision.

Complaints on the grounds of legal irregularities in decisions that were made by the institution according to the stipulations in the executive order on examination regulations (e.g. legal incapacity, the hearing procedure, correct interpretation of the executive order on examination regulations etc.) may be brought before the Danish Agency for Higher Education and Educational Support. The complaint should be submitted to the institution which will make a statement and the student must be given the opportunity to comment on this statement, the deadline being usually one week. The institution will submit the complaint, the statement and any comments made by the student to the Danish Agency for Higher Education and Educational Support. The institution will submit the complaint, the statement and any comments made by the student to the Agency. The deadline for lodging complaints with the institution is 2 weeks (14 days) from the day the student was notified of the decision.

### **Exemption**

In extraordinary circumstances, the educational institution may opt to disregard stipulations in the curriculum made by the institution or jointly by the institutions offering the programme.

#### **14. Criteria for cessation of registration of students who are not participating actively in studies**

Registration may be terminated for students who have not been participating actively in studies for a continuous period of at least 1 year.

The definition of 'participating actively in studies' is that the student within the past 12 months

1. has participated in at least 2 different exams
2. has passed at least one exam
3. has fulfilled his/her obligations to participate in any kind of activity that is part of the education, including group projects, joint projects, distance learning activities etc. as described in the curriculum.
4. has submitted the assignments, reports, (learning) portfolios etc. that are prerequisites to participating in exams as described in the curriculum and that the coursework is academically honest and does not include material that is the copyright of others
5. has attended activities to which an obligation to attend applies as stated in the curriculum

Non-compliance of one or more criteria in the definition of 'participating actively in studies' may be the grounds of cessation of registration as a student.

Periods in which the student has not been participating actively in studies due to leave of absence, maternity leave, adoption of a child, verified illness or military service do not count against the period of 12 months required for participating actively in studies. On request, the student must provide documentation of such matters.

The study programme may ignore these stipulations in extraordinary circumstances. The appeal should be submitted to the programme director.

Before registration is terminated, the student will be informed in writing. In connection with this notification, the student will be made aware of the above-mentioned rules. In the letter, the student must be informed that he/she will have 14 days to submit documentary evidence to prove that periods in which he/she was not participating should not count against his/her active participation in studies. Furthermore, the student will be notified of the deadline for making an appeal for exemption.

If the student has not responded within the fixed deadline, his/her registration as a student will be terminated.

If the student requests that registration is not terminated, the procedure will be suspended until the programme director has decided the case.

The student may make a complaint to the programme director about the decision within 2 weeks of receipt of the decision. The complaint will suspend the proceedings. If the programme director maintains the decision, the student may appeal to the Ministry of Science, Innovation and Higher Education within 2 weeks of receipt of the decision, but only in respect of legal matters.

The rules about the exams that the student must have participated in before the end of the second semester and passed before the end of the fourth semester according to the curriculum, and the deadlines for completion of the education stated in the Executive Order for the study programme, remain in force regardless of the stipulations above.

## **15. Transfer credit**

Passed educational elements are equal to corresponding educational elements in other educational institutions offering the programme.

In each case, or according to stipulations in the curriculum, the institution may approve that transfer credit is awarded for completed educational elements from another Danish or foreign higher education. The decision will be made based on an academic assessment of the equivalence of the educational elements in question.

On approval, the element is considered completed on the condition that it was passed according to the regulations for the study programme in question.

## **16. Regulation currently in force**

- Act no. 207 of 31 March 2008 on academy profession degree programmes and professional bachelor degree programmes.
- The Danish (Consolidation) Act no. 636 of 29 June 2009 on the Bachelor's Degree Programme in Software Development.
- The Danish (Consolidation) Act no. 975 of 19 October 2009 on the Bachelor's Degree Programme in Software Development.
- The Danish (Consolidation) Act no. 1146 of 1 October 2010 on quality assurance of profession-oriented higher educations.
- The Danish (Consolidation) Act no. 214 of 21 February 2012 on access to academy profession degree programmes and professional bachelor degree programmes.
- The Danish (Consolidation) Act no. 714 of 27 June 2012 on examinations in profession-oriented higher educations.
- The Danish (Consolidation) Act no. 262 of 20 March 2007 on the grading scale and other forms of assessment.
- The Danish (Consolidation) Act no. 952 of 2 October 2009 on open education (profession-oriented adult education) etc.



## Institutional section

### 17. Compulsory and elective modules.

The following modules will be offered as compulsory

- Systems integration (10 ECTS)
- Large-scale system development (10 ECTS)
- Testing (10 ECTS)
- Contract-based programming (10 ECTS)

The following modules will be offered as electives

- Databases for developers (10 ECTS)
- Specialisation module (10 ECTS)

### Specialisation module (10 ECTS)

#### Purpose

The purpose of the specialisation module is to give the student the opportunity to put a personal professional twist his/her education and develop his/her learning competencies and dissemination skills.

The specialisation module consists in three elements:

- Two seminars that introduce fundamental philosophy of science and academic writing
- A number of academic seminars (usually 3) that introduce IT topics that are not covered in the other modules of the programme.
- An individual learning period in which the student receives guidance from a supervisor and engages himself/herself deeply in a topic of his/her own choice.

The topic must be relevant to software development and the topic must be dealt with in more depth than is done in the other modules of the programme.

The seminars make up approx. one third of the module and the individual learning period approx. two thirds.

**Documentation** The individual learning period should be recorded and documented in shape of an academic paper about the selected topic. The maximum length of the paper should be 15 pages.



Assessment: Pass/fail

## **20. Parts of the programme that may take place abroad**

The internship, the specialisation and the final degree project may be completed abroad. This is on the condition that UCN has approved the company/the educational institution and the contents of the element.

Other educational elements may also take place in foreign educational institutions subject to agreement with UCN.

## **21. Learning and teaching methods**

In our IT programmes, we use a wide range of teaching and learning methods that combined support the student in achieving the learning goals described in this curriculum. The learning and teaching methods are based on UCN Technology's common learning/teaching approach. The learning approach is based on the PULSE philosophy about "The Whole Person" which describes the learning outcome as three dimensional, namely:

- Head: "Knowledge, reflection and the ability to generate ideas"
- Heart: "Personal insight and development, relations and co-operation"
- Legs: "Initiative and responsibility"

The overall teaching methods are based on dialogue-based lessons and doing assignments and project work in groups. However, the programme also features a lot of study group activities, self study activities, individual assignments and projects, presentations in front of groups and the whole class, interdisciplinary theme activities and much more.

Common to all these activities is that we always try to define (or help you define) clear goals for the learning activities.

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

## **22. Obligation to participate**

For the learning and teaching methods of the programme work as intended, students are under an obligation to participate, which includes an obligation to hand in or present assignments and projects.

The obligation to participate may also be a prerequisite of exam participation. Furthermore, some programme elements may impose an obligation to attend. Any obligations to participate or to attend will be described in the syllabi.

In certain cases, the institution will register the degree of participation. The purpose of this registration is to allow the institution to offer help and guidance as soon as possible if a student neglects his/her obligation to participate.

### **Formal requirements**

Please see the formal requirements under the examination descriptions in the curriculum and the general description of report structure for området (engelsk navn på rapportskrivningsvejledningen)

## **23. Language**

The teaching materials are all in English and the lessons are taught in English. You do not need to know any other languages. Your English skills must meet the requirements of the Danish (Consolidation) Act on Admission to Academy Profession Degree Programmes and Professional Bachelor Programmes.

## **24. Effective date and transition period**

This curriculum will come into effect on 1 September 2012 and will apply to students who commence their study programme on 1 September 2012.

It will also apply to students who commenced the study programme prior to 1 September 2012 (their credit will be transferred to be valid under this curriculum).

Students who have commenced exams before 1 September 2012 under the previous, now repealed, curriculum may however complete their exams according to that curriculum.

The previous curriculum ("Curriculum Bachelor in Software Development") will be repealed as of 1 September 2012.