Computer Science

Curriculum 2023 – National section

BUSINESS ACADEMY SOUTHWEST

CURRICULUM
for
AP in Computer Science

Effective from 1 August 2019
Revised 18/03/2019

Contents

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

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

1 The objectives of the programme in relation to learning achieved

Knowledge

The graduate has:

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

Skills

The graduate is be able to:

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

Competencies

The graduate is be able to:

- manage a process for development of a system applying up-to-date methods, techniques and tools
- participate in a technical and multidisciplinary collaborative effort and project work developing software with a professional approach and participate in the development of the practical aspects of software development

- in a structured context acquire new knowledge, skills and competencies in relation to the IT industry, including domain knowledge and technological knowledge and application of new methods, techniques and tools.

2 The programme comprises the following seven national programme elements:

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

2.1 Programming

Contents

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

Learning objectives for Programming

Knowledge

The graduate has:

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

Skills

The graduate will be able to:

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

Competencies
The graduate can:

- manage development focused situations in the context of programming
- be part of development and maintenance projects as a professional programmer
- acquire new knowledge, skills and competencies in a structured context of relevance to programming languages, development tools, programming techniques and program design.

ECTS credits
The Programming course totals 30 ECTS credits.

2.2 Systems Development

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

Learning objectives for Systems Development
Knowledge
The graduate has:

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

Skills
The graduate can:

- apply key techniques and tools specific for this discipline for modelling of IT systems at the level of analysis and design

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

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

ECTS credits
The Systems Development course totals 15 ECTS credits.

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

Knowledge
The graduate has:
- development based knowledge about up-to-date operating systems and database systems, including their structure and facilities
- understanding of the theory and practice of concurrency problems

Skills
The graduate can:
- apply key methods and tools to synchronise processes and threads
- apply key facilities in database systems and operating systems in an appropriate manner

Competencies
The graduate can:

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

ECTS credits
The Technology course totals 5 ECTS credits.

2.4 Understanding Business

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

Learning objectives for Understanding Business
Knowledge
The graduate has:

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

Skills
The graduate can:

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

Competencies
The graduate can:

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

ECTS credits
The Understanding Business course totals 10 ECTS credits.

2.5 **Programming 2**

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

Learning objectives for Programming 2

Knowledge
The graduate has:

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

Skills
The graduate can:

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

Competencies
The graduate can:

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

ECTS credits
The Programming course totals 10 ECTS credits.

2.6 Technology 2

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

Learning objectives for Technology 2

Knowledge
The graduate has:

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

Skills
The graduate will be able to:

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

Competencies
The graduate can:

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

ECTS credits
The Technology course totals 10 ECTS credits.

2.7 Systems Development 2

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

Learning objectives for Systems Development 2

Knowledge

The graduate has:

- development based knowledge about systems development methods and the importance of processes to the quality of products and processes

Skills
The graduate can:

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

Competencies
The graduate can:

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

The compulsory programme element concludes with an exam.
ECTS credits
The Systems Development course totals 10 ECTS credits.

2.8 Number of exams for the national programme elements

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

In addition to this, the other national programme elements comprise one exam and an additional exam in the Final Exam Project. For information about the number of internship exams, see section 3.
For a total list of all exams under the degree programme, please see the institution-specific part of the curriculum, since the students can sit exams in the national programme elements specified in this curriculum together with the programme elements specified for the institutions-specific part of the curriculum.

3 Internship

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

Learning objectives for the internship

Knowledge

The graduate has:

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

Skills

The graduate can:

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

Competencies

The graduate can:

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

ECTS credits

The internship totals 15 ECTS credits.

Number of exams

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

4 What is required for the Final Exam Project

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

The objective of the Main Exam Project is to document the student's understanding of practice and key theories and methods in relation to a practice-related problem based on a specific assignment within the subject matter covered by the programme. The problem to be addressed must be a key issue within the degree programme and the

profession and the student must formulate it, if relevant jointly with a private or a public company. The problem is subject to the institution's approval.

What is required for the Final Exam Project

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

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

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

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

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

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

Exam in the Final Exam Project

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

ECTS credits

The Final Exam Project totals 15 ECTS credits.

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

5 Rules about credits
Successfully completed programme elements are equivalent to the same programme elements taught at other educational institutions offering the same degree programme.
The student is obliged to provide information about any programme elements completed at other Danish or foreign institutions of further education and about any past employment that may qualify for credits.
The educational institution approves credits on a case-by-case basis based on successfully completed programme elements and any employment equivalent to courses, programme elements and internship elements.
The decision will be based on an academic assessment.
A student who has obtained advance approval of studies in Denmark or abroad must document successful completion of such studies upon his/her return to this Academy. In connection with the advance approval, the student must grant the institution the right to collect the necessary information upon completion of the studies abroad.
On acceptance as set out above, the programme element is considered completed, provided it was passed in accordance with the rules for the programme in question.

6 Effective date
Effective date
This national curriculum takes effect by 1 August 2019. Students admitted after this date will follow this curriculum, also all previously admitted students will be transferred to this curriculum as of 1 August 2019. Students who have commenced exams prior to this date will sit the exams according to the relevant curriculum in force until 1 August 2019.
At the same time, the national part of the curriculum of January 2015 is cancelled.

Computer Science

Curriculum 2023 – Institutional section

BUSINESS ACADEMY SOUTHWEST

Table of contents

1. Curriculum framework

This is a translated version of the Danish curriculum. In case on any discrepancies between this curriculum and the Danish curriculum, the text in the Danish curriculum applies.

This curriculum is based on:

- Existing Ministerial Order on Academies of Professional Higher Education
- Existing Ministerial Order on Academy Profession Programmes and Professional Bachelor Programmes
- Existing Ministerial Order on Examinations and Tests on Professionally and Business Oriented Higher Education Programmes (the Examination Order)
- Existing Ministerial Order on Grading Scale and other Assessment for Education Programs at the Ministry of Higher Education and Science (the Grading Scale Order)
- Existing Ministerial Order on Technical and Commercial Academy Profession Programmes and Professional Bachelor Programmes
- Existing Ministerial Order on Admission to and Enrolment on Academy Profession Programmes and Professional Bachelor Programmes (the Admissions Order).

All can be found here: https://www.retsinformation.dk/

1.1. Effective date and transition period

This institution-specific section of the curriculum takes effect on 28.08.2023 and applies to all students enrolled on the programme on this date or later.

Current students at the Academy will complete their studies according to the curriculum valid at the initiation of their studies. With the exception of students on leave, they will continue their studies according to the curriculum valid at the time of resumption.

1.2. The graduates title in Danish and English

The programme gives the graduate the right to use the title AP Graduate in Computer Science. The Danish title is Datamatiker AK.

1.3. Scope of the programme

The scope of the AP programme in Computer Science is to qualify the graduate to be able to independently carry out work in analyzing, planning and implementing solutions regarding development

and integration of IT systems in private and public companies, both nationally and internationally.

The programme is placed at level 5 in the qualification framework for higher education.

The programme is worth 150 ECTS-credits, which includes:

- ✓ Educational elements with a total scope of 120 ECTS-credits which are organized within the professional areas of the programme
- ✓ Internship with a total scope of 15 ECTS-credits
- ✓ Final examination project with a total scope of 15 ECTS-credits

2. The subject elements of the programme

The educational elements are organized within the following subject elements with a total scope of 120 ECTS-points and are mutually weighted in the ratio 3:6:11:4.

The business: The subject element contains an understanding of how IT-solutions can develop and be integrated into the business and the business processes. Including how new business forms such as E-business can be implemented, as well as what risks may be associated with new solutions, for example regarding IT security. The subject element also includes innovation and change management as well as planning and managing IT projects.

System Development: The subject element includes various methods for analysis, design and documentation of IT solutions. Including the use of patterns and design principles as well as usability and quality assurance of both functionality, data and user interface.

Programming: The subject element contains an understanding of programming with focus on different languages, techniques and fields of application. The subject element contains algorithms, architecture as well as more specific matters such as concurrency, distributed programming and database programming. There is a focus on the use of practical development environments, program development, documentation and testing.

Technology: The subject element contains an understanding of the technological foundations of IT systems, including operating systems, networks and database systems. The subject element also includes synchronization of multiple users and security in distributed systems.

3. Overview of the programme

<table>
<tr><th>1st semester</th><th>2nd semester</th><th>3rd semester</th><th>4th semester</th><th>5th semester</th></tr>
<tr><td>Software Construction 1
17,5 ECTS</td><td>Software Construction 2
12,5 ECTS</td><td>Computernetwork and Distributed Systems
10 ECTS</td><td rowspan="3">Electives
30 ECTS</td><td rowspan="2">INTERNSHIP 15 ECTS</td></tr>
<tr><td>Software Design 1
7,5 ECTS</td><td>Software Design 2
7,5 ECTS</td><td>Software Development Methodologies
10 ECTS</td></tr>
<tr><td rowspan="2">IT-Business and organisation 1
5 ECTS</td><td>IT-Business and organisation 2
5 ECTS</td><td rowspan="2">Software-architecture and distributed Programming
10 ECTS</td><td>FINAL EXAMINATION PROJECT 15 ECTS</td></tr>
<tr><td>Database and Operatingsystems
5 ECTS</td><td></td></tr>
</table>

3.1. National programme elements

Appears in the national part of this curriculum.

3.2. Local and elective programme elements

In addition to the national part of this curriculum, the programme includes 30 ECTS local elements, organized as elective elements. Electives appear in the catalog on Moodle. Exams and prerequisites for the exam will appear in section 5.

Contents

The elective educational elements gives the student an opportunity to gain additional competences through specialization within topics broadly related to the IT field.
A number of elective courses are offered each year. These courses, which are posted on EASV Moodle, are created in close cooperation with the local business community and with input from both teachers and students.

Students can arrange their elective courses as a theoretical and/or practical educational process. Approval from the school must be gained.

ECTS credits
The elective elements account for a total of 30 ECTS credits. The various elements will be offered in multiples of 5 ECTS.

Learning objectives
The specific learning objectives for each elective are described in the subject description to be found on EASV Moodle.
General learning objectives for the elective elements are as follows:

Knowledge
The student has knowledge about:
- Theory and practice in relation to the topics chosen
- Relevance of the topics chosen in relation to theory and practice within the IT-field

Skills
The student is able to:
- Select, describe and carry out literature search related to a self-selected IT-related issue
- Discuss societal aspects related to the chosen topics
- Evaluate issues and suggest solutions in relation to the topics chosen
- Communicate central results

Competences
The student is able to:
- Independently familiarize him-/herself with new topics within the theory and/or practice of the subject areas
- Put into perspective and relate the chosen topics to other subject areas within the education.

Timing
Electives are offered during the 4th semester of the education.

4. Teaching and working methods
Teaching in the Computer Science degree programme is conducted as a dynamic and interactive process, where focus in placed on active participation by the students, and where both students and instructors contribute constructively to the learning process. The individual student is expected to be responsible for his or her own learning.

To ensure optimal and professional learning, as well as the personal development of the individual student, teaching in the programme makes use of a variety of teaching methods. Emphasis is placed on dialogue, discussion and project work, with instruction methods ranging from classroom teaching to interdisciplinary cases, thematised assignments and teamwork. Visiting lecturers and company visits are also arranged.

Teaching form
Teaching is based on applied theory and relevant business practice, i.e. general problems and issues in the IT industry. Topics and themes are selected which cover issues relevant for different types of businesses,

with focus on the challenges presented by a changing environment, ongoing developments and increasing internationalisation.

Instruction will focus on work and learning methods that enhance the student's abilities to work independently, collaborate with others and think innovatively – using classroom teaching, project work in groups, and individual assignments as central teaching forms. The student is involved in the planning of the course and is encouraged to make use of teamwork, interactive learning and creative thinking.

5. Exams and prerequisites

Semester	Exam	ECTS credits	Internal/external	Evaluation
1st semester	The Study Start Test	-	Internal	Approved/Not approved
2nd semester	First Year Examination Compulsory element: Programming, Systems Development, Technology and Business Understanding	60	External	7-point grading
3rd semester	Programming Compulsory element: Programming 2 and Technology 2	20	Internal	7-point grading
3rd semester	Systems Development Compulsory element: Systems Development 2	10	Internal	7-point grading
4th semester	Specialization	30	Internal	7-point grading
5th semester	Internship	15	Internal	7-point grading
5th semester	Final exam project	15	External	7-point grading

Information about time and place for the examinations will be posted on Moodle.

Joining the semester, the education element, etc. is also a registration for the corresponding exams.

All examinations are to be submitted/presented in understandable English or Danish. Students with other native languages can seek exemption from the fact that formulation and spelling skills can influence the evaluation of the final examination project or any exam for which the curriculum specifies that such skills are included in the evaluation. Application for the exemption should be sent to the head of department at least four weeks prior to the examination.

Prerequisites for the exam

In order to sit the exam, there may be one or more prerequisites that must be met. Prerequisites are described in the following at each exam.

Prerequisites can be several different things, e.g. submission of a written project, participation in class, a presentation, etc.
Note that if one or more of the prerequisites is not met you will not be allowed to sit the exam, and will have used one exam attempt.

5.1 Scope and criteria for examinations

In the following, exams in each of the national compulsory elements is described, including:

- Prerequisites for taking the exam
- Exam form
- Assessment criteria
- Formal requirements

5.1.1 The Study Start Test

According to the Executive Order on Examinations, the student must participate in and pass a study start test in order to continue on the study programme. The purpose of the study start test is to clarify: whether the student has actually started the programme.
The study start examination is held no later than two months after the commencement of the study programme.

Test form

The study start test in an individual, written test, based on the student's reflection on prior knowledge and motivation for the study programme.

Assessment criteria

The study start test is internal assessed and is assessed with "Approved" or "Not approved".

If the student does not fulfil the study start test requirement in the first attempt, the student has another attempt, which must be conducted no later than three months after the commencement of the study programme. If the student does not fulfil the test in the second attempt, the student cannot continue on the study programme and his/her enrolment will consequently be cancelled.

5.1.2 First Year Examination – Examination in the compulsory educational element Programming, Systems Development, Technology and Business Understanding

Prerequisites for the exam

The following requirements apply:

- Submission of 4 compulsory assignments cf. Syllabus on EASV Moodle.
- The written project, on which the examination and appraisal are based, is to:
    - Meet all formal requirements, cf. below, and
    - Be submitted on time, cf. examination schedule available on EASV Moodle.

Exam form

This examination is an external, oral group exam and is based on a written group project. Grading is according to the 7-point grading scale.

Groups are to consist of 2 – 4 students; any exception to this requirement is to be approved by the teacher.

The examination represents 60 ECTS. One combined grade for the written report and the oral presentation is given.

The project is presented by the project group in the oral exam, the duration of which is max. 10 minutes. This is followed by an individual examination, lasting 30 minutes including grade evaluation, of each member of the group.

Assessment criteria

The evaluation criteria for the examination are the learning objectives for the compulsory educational element Programming, Systems Development, Technology and Business understanding offered during the 1st and 2nd semester.

Learning objectives can be seen in the national section of the Curriculum.

Formal requirements for the written project report

The following components should be included:

- Front page with title of the report
- Table of contents
- Introduction, including main issues, problem statement and approaches
- Conclusion (Remember to ensure correlation between the introduction and the conclusion. It should in principle be possible to understand the conclusion without having to read other sections than the introduction).
- Bibliography (including all sources referred to in the report)
- Appendices (including only those documents that are central to the report)

The project must be minimum 20 standard pages and a maximum of 40 standard pages.
A standard page is defined as 2400 characters, including spaces and footnotes, but excluding the front page, table of contents, bibliography and appendices. Appendices are not included in the grading evaluation.

Timing

The examination is held at the end of the 2nd semester. Further information regarding date and place as well as submission of the written group report can be found on EASV Moodle.
The exam must be passed before the end of the first year of study if the student is to be allowed to continue in the program.
The head of department can grant the individual student exemption from the specified deadlines for passing the examination if this is justified by illness, maternity leave or exceptional circumstances.

Language

English/Danish

5.1.3 Examination in Programming – Examination in the compulsory educational elements Programming 2 and Technology 2

Prerequisites for the exam
The following requirements apply:

- Submission of 2 compulsory assignments cf. Syllabus on EASV Moodle.
- The written project, on which the examination and appraisal are based, is to:
    - Meet all formal requirements, cf. below, and
    - Be submitted on time, cf. examination schedule available on EASV Moodle.

Exam form
This is an internal oral examination.
The oral examination lasts for 30 minutes, including evaluation. One combined grade for the written report and the oral presentation is given.
The examination represents 20 ECTS.

Assement criteria
The evaluation criteria for the examination are the learning objectives for the compulsory educational element Programming 2 and Technology 2 offered during the 3rd semester of the education.
Learning objectives can be seen in the national section of the Curriculum.

Formal requirements for the written project report
The project should involve essential parts of the semester curriculum for the subjects SDP, CDS and SDM.

Timing
The examination is held at the end of the 3rd semester. Further information regarding time and place can be found on EASV Moodle.

Language
English/Danish

5.1.4 Examination in Systems Development 2 – Examination in the compulsory educational element Systems Development

Prerequisites for the exam
The following requirements apply:

- Submission of 2 compulsory assignments cf. Syllabus on EASV Moodle.
- The written project, on which the examination and appraisal are based, is to:
    - Meet all formal requirements, cf. below, and
    - Be submitted on time, cf. examination schedule available on EASV Moodle.

The examination
This is an internal individual examination graded according to the 7- point grading scale.
Groups are to consist of 2 – 4 students; any exception to this requirement is to be approved by the head

of department.
The examination represents 10 ECTS.
One combined grade for the written report and the oral presentation is given.
The project is presented by the student in 10 minutes, followed by an examination dialogue. The entire exam lasts 20 minutes including grade evaluation.

Assessment criteria
The evaluation criteria for the examination are the learning objectives for the compulsory educational element System Development 2 offered during the 2nd year of the education.
Learning objectives can be seen in the national section of the Curriculum.

Formal requirements
The project should involve essential parts of the semester curriculum for the subjects SDP, CDS and SDM.

Timing
The examination is held at the end of the 3rd semester. Further information regarding time and place can be found on EASV Moodle.

Language
English/Danish

5.1.5 Elective educational elements
Prerequisites for the exam
The following requirements apply:

- Participation requirements can be linked to the examination in the form of submission of a synopsis. This will be specified on EASV Moodle.

Examinations
An internal oral examination, which can be based on a synopsis that is not included in the overall evaluation, is held in each elective element. Assessment is according to the 7-point grading scale.

Assessment criteria
The evaluation criteria for the examination are the learning objectives for the elective element.

Language
English/Danish

6. Internship
The learning objectives for the internship appear in the national part of this curriculum. The internship is worth 15 ECTS-credits.

Requirements and expectations

The internship allows you to work with relevant issues and gain knowledge about relevant job functions. During the internship you are linked to one or more companies. The internship can be organized flexibly and differentiated and can form the basis for your final examination project.

The relation between theoretical learning and actual practice forms the basis for your objectives for the internship period.

Based on the learning objectives for the internship (see the national section of the Curriculum), you, the internship company and the school supervisor collaborate to identify specific objectives for the internship period.

This then forms the basis for organizing your work during the internship period.

The internship can be compared to a full-time job, with demands regarding working hours, work to be done, involvement and flexibility that correspond to those that you can expect to meet in your first job. If, for documented health reasons, you cannot complete an internship for 37 hours per week, you can apply for a dispensation to organize your internship period appropriately.

Prerequisites for the exam

- You must have actively participated in the internship,
- internship report, on which the examination and the evaluation are based, must meet the requirements cf. below,
- the internship report must be handed in on time, cf. the exam schedule available on Moodle, and
- you must have completed your evaluation of the internship (questionnaire).

The Examination and assessment criteria

This examination is an internal oral exam, based on the internship report.

The assessment criteria will be the learning objectives for the internship.

Evaluation is graded according to the 7-point grading scale based on an overall assessment of the written internship report and the oral presentation.

You will present relevant parts of the internship report in approximately 10 minutes, followed by an examination dialogue where all parts of the internship can be included. The exam lasts for 20 minutes including evaluation.

The presentation can be held via video conference if approved by the head of department.

The exam is held at the 5th semester after the internship. Further information regarding time and place and about handing in the internship report can be found on Moodle.

Requirements for the internship report

The following requirements apply:

- Front page with student name, internship company, and internship period
- Preface
- Introduction, including main issues, problem statement and approaches
- Reflection of the learning outcome
- Description of specific jobs done during the internship
- Conclusion
- Appendix: Statement from the internship company and the student's diary/internship log
- Bibliography (including all sources referred to in the report)
- Other Appendices (including only those documents that are central to the report)

The maximum number of pages is 10 standard pages. A standard page is defined as 2400 characters, including spaces and footnotes, but excluding the front page, table of contents, bibliography and appendices. Appendices are not included in the grading evaluation.

The internship report is submitted in English or Danish for AP in Computer Science.

7. Final examination project

The final examination project and the internship exam together with the other exams must document that the learnings objectives of the programme is met.

Requirements regarding the final examination project as well as learning objectives can be found in the national section of this curriculum.

The examination is held at the end of 5th semester. Further information regarding time and place for the examination can be found on Moodle.

Prerequisites for the exam

Failure to submit the written project correctly means that the student will not be allowed to attend the exam, the student will use one exam attempt.

The examination in the final project cannot be held until the internship exam and all other exams in the education have been passed.

The exam and organization

This is an external individual examination graded according to the 7- point grading scale.

Groups are to consist of 2 – 4 students; any exception to this requirement is to be approved by the head of department.

One combined grade for the written report and the oral presentation is given.

The project is presented by the student in 15 minutes, followed by an examination dialogue.

The final exam project represents 15 ECTS.

The examination will be in Danish or English for AP in Computer Science.

Assessment criteria

The evaluation criteria for the examination are based on the learning objectives for the final project in the national section of the Curriculum.

Formulation and spelling skills can influence the evaluation of the final examination project.

Requirements for the written report

Project reports must be at least 15 standard pages. Project reports written by a single student may total 40 standard pages as a maximum; reports written by several students may total an additional 10 standard pages per student.

8. Educational elements completed abroad

You can – with pre-approval – obtain credit for any of the educational elements that you complete abroad. In such cases you must, after completion of your studies abroad, document the educational elements that have been completed. In connection with pre-approval you must agree that the school is entitled to secure any necessary information about the educational elements.

With prior acceptance of credits, the specific educational element will be considered completed if you have passed the course according to existing and relevant rules for the programme.

9. Credits for local and elective educational elements

Any elective and local educational element that has been passed is considered to be equivalent to the corresponding educational element offered by other educational institutions offering the education.

The student is to apply for prior approval if credit is wished for educational elements that are not included in the education.

10. Student activity and participation requirements

For you to be described as an active student you are required to participate actively in relevant activities and comply with the mandatory obligations.

Enrolment can be terminated for students who have not participated actively in their studies. Active participation is defined as follows:

- Lived up to the participation requirements for the education, including group work, joint projects, distance learning, etc. as can be seen in the description of participation requirements and submission of reports described for the examinations.

- Submitted the assignments, reports, etc. which are a prerequisite for an examination in accordance with the Curriculum, with a trustworthy content.

10.1 The consequences of absent student actitivty

10.1.1 Termination of state educational grant (SU)

Failure to meet one or more of the criteria for student activity can lead to termination of your state educational grant (SU).

Periods in which the student is not active due to leave of absence, maternity leave, adoption, documented illness, or military service are not included in the above. The student must, if so required, supply documentation for such conditions.

Exemption can be granted from the above requisites in the case of exceptional circumstances. Applications for exemption should be sent to the head of department.

10.1.2 Termination of enrolment

Failure to meet one or more of the criteria for student activity can lead to termination of enrolment in the programme.

Prior to termination of enrolment in the education, the student is to be sent a written notice that points out the above-mentioned rules. This notice also specifies that the student has 14 days in which to submit documentation for periods with a lack of student activity that the student claims should not lead to expulsion and specifies as well a deadline for seeking exemption. If the student has not reacted within this period of time, he/she is expelled from the programme.

If the student requests that he/she not be expelled, this request will have a delaying effect until the head of department as decided upon the matter. The student is entitled to submit a complaint to the head of department about a decision that has been made two weeks at the latest after being informed of the decision. This complaint will have a delaying effect. If the head of department maintains the decision, the student can complain to the Ministry of Higher Education and Science within two weeks after receiving the complaint, as far as legal issues are involved.

Exemption can be granted from the above requisites in the case of exceptional circumstances. Applications for exemption should be sent to the head of department.

11. Exam terms and conditions

Joining the semester, the education element, etc. is also a registration for the corresponding exams

Deregistration from an exam is only possible under special circumstances such as illness (documented with a medical certificate), death in the family or exceptional circumstances that influences your well-being. Exemption can be granted if you are an elite athlete. Deregistration shall be provided to the head of department before the beginning of the exam or as soon as possible. Documentation in writing need to be

submitted before the attempt can be cancelled, cf. section 11.

11.1 Use of aids

Any rules for restrictions in the use of aids will be made clear in the specifications for the individual examination.

11.2 Special examination conditions

The student can apply for special examination conditions when warranted by physical or mental impairment. The application should be submitted to the head of department at least four weeks prior to the date of the examination. An exemption from this deadline can be given in the case of suddenly occurring health issues.

The application must be accompanied by a medical certificate, a statement from e.g. an institute dealing with speech, hearing or sight impairment or dyslexia, or other forms of documentation certifying serious health issues or relevant functional impairment.

11.3 Re-examinations due to illness, failing or non-attendance

11.3.1 Re-examination due to illness

If you have not been able to sit an examination due to documented illness or other unforeseen circumstance, you are given the opportunity to sit a re-examination as quickly as possible. In the case of an examination taking place at the end of the last examination period, you are given the opportunity to sit the examination in the same examination period or immediately thereafter.

This examination can be identical to the next ordinary examination. It is your responsibility to investigate when the re-examination will be held.
Information about time and place for these re-examinations can be found on Moodle.

Illness must be documented by a medical certificate received by the institution three days at the latest after the examination has been conducted. If you become acutely ill during an examination you must document that you have been ill on the day in question.

If illness is not documented according to the above rules, the examination will count as one examination attempt spent.

Any costs for the medical certificate are the responsibility of the student.

11.3.2 Re-examination due to failing or non-attendance

By not passing or by not attending the examination, you are automatically registered to sit the re-examination, provided that you have not spent all three examination attempts. The re-examination can be identical with the next ordinary examination.

It is your responsibility to investigate when the re-examination will be held. Information about time and place for these re-examinations can be found on Moodle.

Exemption from the above can be given in the case of extraordinary conditions, including documented disability.

12. Errors or omisssions during the exam

If errors and omissions are brought to attention during the exam, the head of department decides how the error or the omission can be remedied.

In the case of serious errors or omissions, or where it must be considered to be the most correct way to remedy the error, the head of department may cancel the exam in question and arrange a re-examination. In the case of a cancelled exam the assessment lapses.

In the case of other significant errors or omissions and extraordinary exam may be offered. The offer is given to all affected students. The student may choose to keep their original assessment even if they have participated in the extraordinary exam.

13. Cheating offences and disruptive behaviour

During any exam the student must behave considerately and follow the instructions given by the examination supervisor, examiner or censor.

Cheating on exams will be dealt with according to the rules in the existing Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes (The examination order).

It is referred to as cheating offences when the student:

- plagiarizes cf. section 13.1,
- counterfeits,
- conceals or misleads about own efforts or results,
- takes part in an unauthorized collaboration,
- receives or tries to receive help during the exam, or helps other students when it is not a group exam,
- uses unauthorized aids,
- has wrongfully obtained prior knowledge of the examination assignment,
- provides wrongful attendance information, or
- seeks to circumvent, disable or otherwise obstruct the intent of EASV's use of monitoring programs.

When submitting written material, you must verify by your signature that the material has been produced without undue assistance.

13.1 Using one's own work and that of others - plagiarism

Cheating in exams through plagiarism comprises instances where a written answer appears to be completely or partially produced personally by the examinee or examinees, but:

1. Comprises identical or almost identical rendering of the wording or work of others, without clearly identifying this using quotation marks, italics, indentation or other clear indications stating the source of the material, cf. the educational institution's requirements to written work on Moodle.
2. Comprises major pieces of text with choice of words or formulations so close to that of another piece of writing that it is possible to determine through comparison that the text could not have been written without using the source in question.
3. Comprises the use of words or ideas of others without giving reference to the source in an appropriate manner.
4. Re-uses text and/or central ideas from own previously assessed answers (self-plagiarism) without observing the provisions laid down in items 1 and 3 above.

13.2 Investigation of cheating offences in exams, including plagiarism

The examinor must report suspicions of cheating offences and/or plagiarism as soon as possible to the head of department, including the available documentation. It must be disclosed, if it is a repeat case for one or more of the involved students.

Postponement of the exam

If the cheating offence concerns suspected plagiarism in a written report and/or answer that is to be used in the assessment of a subsequent oral exam, the head of department postpones the exam, unless the issue can be investigated prior to the date set for the exam.

Involving the student – hearing of the party/parties

The head of department decides whether the hearing of the student is to be oral, in writing, or a combination thereof.

For the oral hearing, the student is summoned to a clarifying interview, in which documentation substantiating the suspected cheating in the exam is presented to the student and in which the student is asked to present his/her point of view. The student has the right to be accompanied by a person of his/her own choice.

For the written hearing, the documentation substantiating the presumed cheating in the exam is sent to the student with a request for a written response to the accusation.

13.3 Disciplinary procedures

In case of cheating offences or disruptive behavior during the exams, the head of department, the person authorized by the head of department or the examiners in agreement may expel the student from the exam while it is taking place. In such cases the justification of the action is to be evaluated in connection with the subsequent decision. If the disruptive behaviour is of a less serious nature, the educational

institution will initially issue a warning.

If clarification of the issue confirms the presumed cheating offence the student will not have the exam assessed and one examination attempt will have been spent. The student may also receive a written warning.

Aggravating circumstances or repeated offences could lead to temporary or permanent expulsion. The student cannot sit a re-examination and cannot sit the exam again until an exam is scheduled on ordinary terms as part of the degree programme. During the period of expulsion, the student is not allowed to attend classes or sit exams.

14. Complaints about examinations and appeal decisions

Complaints about examinations will be dealt with according to the rules in chapter 11 in the existing Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes (The examination order)

We recommend that you ask the student counsellor for information about complaint procedures and guidance on how to prepare a complaint.

14.1 Complaints about exams

You can submit a written complaint about legal matters or about academic issues; the scope of the exam, including the examination procedure and the assessment.

The complaint must be submitted to the head of department 2 weeks (14 calendar days) at the latest after the assessment of the exam concerned has been communicated. If the due date is on a public holiday, the due date will be the first workday following the public holiday.

The complaint is sent immediately to the original examiners, i.e. the internal examiner and the external examiner for the examination in question. Their statement of response forms the basis for the institution's decision regarding academic issues. Two weeks are normally allowed for this response, July is not included. As soon as the examiners' response is available, the student issuing the complaint is given an opportunity to comment on the statements, normally with a one-week deadline.

The decision is made by the institution on the basis of the complaint, the examiners response and the complainant's comments. The decision is to be communicated in writing and can:

1. Offer the possibility of a new assessment (re-assessment). This applies to written exams only.
2. Offer the possibility of a new exam (re-examination) with new examiners.
3. Reject the complaint.
4. A combination of 1-3 if the exam includes a written assignment with oral examination.

14.2 Appeals and complaints about appeal decisions

The complainant can appeal the institution's decision on a complaint. The appeal must be submitted two weeks at the latest after the decision has been communicated to the student.

Complaints about legal aspects of decisions made by the institution according to the rules laid down by the Examination Order (e.g. incapacity, hearings, correct or incorrect interpretation of the Examination Order) can be submitted to the Danish Agency for Higher Education and Science. The complaint must be submitted to the head of department. The institution issues a statement and the complainant is normally given one week in which to respond with his/her comments. The institution forwards the complaint, the statement and any comments the complainant may have to the Danish Agency for Higher Education and Science.

Complaints about the institutions decision on academic issues can be submitted to an appeals panel. The complaint must be submitted to the head of department.

The appeals panel consists of two authorised external examiners appointed by the chairman of the external examiners, a lecturer authorised to conduct examinations, and a student studying the subject area (the degree programme), both of which are appointed by the head of department.

The appeals panel makes decisions based on the material used by the educational institution in making its decision and the student's appeal, with reasons stated. The appeals panel must make its decision two months at the latest (in the case of spring semester exams three months) after the submission of the appeal.

The appeals panel can:

1. Offer the possibility of a new assessment with new examiners (re-assessment). This applies to written exams only.
2. Offer the possibility of a new exam with new examiners (re-examination).
3. Reject the appeal.
4. A combination of 1-3 if the exam includes a written assignment with oral examination.

The decision of the appeals panel is final, which means that the case cannot be brought before a higher administrative authority as far as the academic part of the complaint is concerned.

14.3 Re-assessment and re-examination

If the decision is to offer re-assessment or re-examination, the complainant must be informed of the fact that the re-assessment or re-examination may lead to a lower grade.

The student must accept the offer within a period of two weeks after the decision has been communicated. Acceptance can thereafter not be cancelled. If the student does not accept the offer within this period of time, there will be no re-assessment or re-examination.
The re-assessment or re-examination must take place as quickly as possible. If the diploma has been issued, it will be withdrawn until the assessment is final, after which a new diploma will be issued.

If the decision is to offer a re-assessment or re-examination, the head of department appoints new examiners. The chairman of the external examiners may appoint an external examiner. The new examiners notify the educational institution of the outcome of their re-assessment and enclose a written statement that specifies the assessment and the reasons for it.

If the decision is to offer re-assessment or re-examination, the decision applies to all students whose examination suffers from the same defects as those referred to in the complaint.

Exemption from this deadline can be given in the event of exceptional circumstances.

15. Exemptions

The institute can grant exemptions from rules in this institution-specific section of the curriculum in cases where such exemption is justified due to exceptional circumstances. The institutions offering this education cooperate to ensure a uniform exemption practice.

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