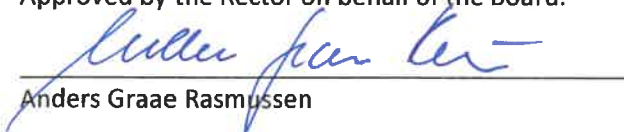# DANIA ACADEMY

Curriculum for IT-Technology

Dania Academy

Valid from 01.09.2020

Curriculum for
IT Technology at Dania Academy of Higher Education

Approved by the Rector on behalf of the Board.

Anders Graae Rasmussen

1. September 2020

Change log:

Version	Date	Performed by	Description
0.1	29-5-2018	Kurt Stæcker Jensen	Initial version – translation from Danish version using the new template.
1.0	15-8-2018	Kurt Stæcker Jensen	Update on basis of feedback from S. Anthony
2.0	6.8.2019	Kurt Stæcker Jensen/ Kaj Richard Nielsen	Updating exams
2.1	12-08-2019	Kaj Richard Nielsen	Errata
2.2	September	Mette Petersen	Update of curriculum, exams and electives
2.3	September	Kaj Richard Nielsen	Correction of learning objectives in elective
2.4	September	Kaj Richard Nielsen	Update of exams
2.5	July 2020	Mette Petersen	Update on regulations

Subject to any printing errors and changes

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Introduction

The curriculum Academy Profession Degree IT-Technology (AP) consist of two parts (rulebooks):

1.   Part 1 - The national
2.   Part 2 - The institutional

The national part of the curriculum for Academy Profession Degree IT-Technology (AP) is issued according to § 21, section 1 in *Bekendtgørelse om tekniske og merkantile erhvervsakademiuddannelser og professionsbacheloruddannelser* (The executive order on technical and mercantile Academy Profession programmes and professional bachelor educations).

The national part of the curriculum is compiled by the education network for Academy Profession Degree IT-Technology (AP) and is approved by the board of all the providers - or by the principal by order of the board - and after a hearing of the institutions' education committees and the education's chairmanship of the external examiners.

The national part secures that the academic contents of the national part of the education is identical in all institutions.

The institutional part is provided by the education at Dania Academy and is organized taking local and regional interests into account.

The institutional part of the curriculum is approved by Dania Academy according to the rules concerning the education, including *Bekendtgørelse om tekniske og merkantile erhvervsakademiuddannelser og professionsbacheloruddannelser (T*he executive order on technical and mercantile Academy Profession programmes and professional bachelor educations).

If a discrepancy should occur between this curriculum and the rules concerning the education in other respects, the other rules concerning the education takes precedence.

Business Academy Dania may grant exemptions from the rules of the curriculum, which are only set by the institution or institutions when it is justified in exceptional circumstances.

1.1. Purpose of the education and the business

The purpose of the training is to qualify the educated to be able to act as an IT specialist independently and here to translate business needs into integrated, secure and sustainable solutions with an effective interaction between hardware, network and software. The trained person can develop, adapt and maintain solutions involving the use and adaptation of both electronics and network components as well as their composition. The educated can plan technical projects as well as participate in consulting companies within the area.

The degree program gives the educated right to use the term IT Technologist AK (AP Graduate in IT Technology).

Part 1 - The national

2. The programme's goals for learning outcomes

2.1. The program's goals for learning outcomes

Knowledge
The graduate has knowledge about:
- Communication and interface technique in general and specifically what is used in embedded and network-based solutions.
- Programming in both embedded and network-based solutions and the use of algorithms and design patterns to ensure effective interaction between hardware, network and software.
- Innovative problem-solving methods, project management of technical projects as well as general information about companies and their structure.
- Customer needs, quality and resource management as well as advisory and consultative functions for technical problem solutions
- Technologies in a broad sense, and especially concerning network, server, components and electronics.
- Security in the network as well as data management in order to understand how secure integrated solutions are designed.
- Basic parts of the technologies, including operating systems, protocols, signal handling and the use of components.
- Sustainability in IT solutions and how this can be included in IT-based solutions.

Skills
The graduate is able to:
- Evaluate technical solutions based on the needs of the company and the customer's needs.
- Communicate and document tasks and solutions.
- Use tools and equipment related to the design, development and testing of both hardware and software.
- Communicate in writing and orally concerning network technology and embedded systems
- Apply innovative approaches focusing on customer needs, in order to ensure effective solutions involving hardware, network and software.
- Use the technology and tools for the design, implementation, testing and quality assurance of secure and sustainable solutions.

Competencies
The graduate is able to:
- Manage the interaction between hardware, software and a network in integrated solutions
- Independently handle planning and quality management of their own technical tasks
- Participate in real-life development processes for academic and interdisciplinary collaboration
- Handle customer tasks in order to convert customer needs into reliable solutions
- In a structured context, acquire knowledge, skills and new competencies by understanding companies and customers' use of IT
- Handle analysis, needs identification, design, implementation and testing of secure and sustainable solutions for network-based and integrated technologies.

3. The program's includes 4 national subject elements

3.1. Network technology

Content
This national subject element consists of network and server technologies, operating systems, network security and communication including protocols and services. The subject element also contains design and the use of networks and network-based/cloud solutions. Generally, work is done with design, development, testing and documentation as well as the dissemination of secure and sustainable solutions.

Learning objectives for Network technology
Knowledge
The student will gain knowledge and understanding about:
- Network and server technologies overall, and the difference between physical and virtual technologies
- Operating systems as well as the difference between different systems
- Data management, including security
- Network security, including different products
- Communication protocols and their use for different architecture

Skills
The student will get the skills to:
- Apply network technology and hardware in connection with design, planning and implementation of complex, secure and sustainable network solutions.
- Apply network technological knowledge in connection with administration, operation and monitoring of complex network solutions
- Communicate and document tasks and solutions within networks
- Use tools and equipment related to the design, development and testing of solutions
- Evaluate network security in concrete products

Competencies
The student will learn to:
- Manage analysis, needs identification, design, development and testing of secure network solutions
- Manage planning and quality management of own network and server technology-related tasks
- Acquire new knowledge, skills and competencies within network and server technologies
- Participate in practice-orientated development processes in teams

ECTS weight
National subject element Network technology is worth 18 ECTS credits.

3.2. Embedded systems

Content
This national subject element contains signal handling, competent technology, communication, Internet of Things-techniques, protocols, interfacing, selection and application of embedded systems as well as components for integrated solutions. The subject element generally works with design, development, testing and documentation as well as the dissemination of secure and sustainable solutions.

Learning objectives for Embedded systems

Knowledge

The student will gain knowledge and understanding about:
- Communication and interface technique in general, as well as how they are used in selected solutions
- An overview of electronic modules, as well as how selected modules are built up
- Protocols including communication protocols, their structure as well as what differences and uses there are
- Internet of Things-techniques, construction generally and selected solutions in more details
- Applied technical mathematics within the subject area to understand electronics and/or communication
- Operating systems, their distinctive features and use
- A general understanding of signal management as well an understanding of how it is used and included in solutions

Skills

The student will get the skills to:
- Evaluate, select, adapt and use embedded systems and components in secure and sustainable solutions
- Build and use test systems
- Document and disseminate tasks and solutions with the use of embedded components and systems.

Competencies

The student will learn to:
- Manage analysis, needs identification, design, development and testing of secure embedded and sustainable solutions
- Manage the analysis, diagnostics, testing and servicing of the technology involved in working with electronic systems, taking into account financial, environmental and quality requirements
- Acquire new knowledge, skills and competencies within the subject area
- Participate in practice-orientated development processes in teams

ECTS weight

National subject element Embedded Systems is worth 18 ECTS credits.

3.3. Programming

Content

The subject area consists of the basic elements of programming, use of environments and data handling as well as design, development, testing and documentation of solutions.

Learning objectives for Programming

Knowledge

The student will gain knowledge and understanding about:
- Programming techniques in different types of language.
- Overall algorithms and design patterns and in connection with their selected programming language.

Skills

The student will get the skills to:
- Use tools and equipment related to the design, development and testing of program's.
- Document, disseminate and support programming-related solutions in connection with internal and customer-facing relationships.

- Evaluate and select simple algorithms for solving specific problems.

Competencies
The student will learn to:
- Acquire new knowledge, skills and competencies within programming.
- Participate in practice-orientated development processes in teams.
- Manage the design, development and testing of larger solutions in multidisciplinary cooperation.

ECTS weight
National subject element Programming is worth 14 ECTS credits.

3.4. Project management and business understanding

Content
This subject element includes innovation, project management, economy, quality and resource management, advisory and consultative functions, as well as documentation and dissemination

Learning objectives for Project management and business understanding

Knowledge
Knowledge The student will gain knowledge and understanding about:
- What innovation is, and how to use innovative methods in problem solving
- Project management in connection with development projects within IT.
- How a company is organized, including the parts that control the company, as well as how one can describe the economic issues overall.
- Quality and resource management as part of a development project and as part of the management of maintenance of IT operations.
- Advisory and consultative functions when IT-specialists need to understand and solve the customer's needs.

Skills
The student will get the skills to:
- Communicate in writing and orally to both professional people and customers.
- Apply innovative problem-solving methods, with a focus on customer needs.
- Evaluate the complexity of a given technical problem.

Competencies
The student will learn to:
- Handle customer tasks in order to convert customer needs into reliable solutions.
- Manage planning and control their own technical tasks as well as engage in interdisciplinary projects.
- In a structured context, acquire new knowledge, skills and competencies by understanding companies and customers' use of IT.

ECTS weight
National subject element Project management and business understanding is worth 10 ECTS credits.

3.5. The number of exams in the national subject elements

National subject elements in the first year of study amount to 60 ECTS, of which at least 45 ECTS points are included in the exam (s) which constitute the first year examination.

For a comprehensive overview of all the exams of the program, refer to the institutional part of the curriculum, as the national subject elements described in this curriculum can be tested together with subject elements set in the institutional part of the curriculum.

4. Internship

Learning objectives for program's internship

Knowledge
The student will gain knowledge and understanding about:
- The most important academic methods and technologies used in embedded systems and network solutions in a concrete company situation.

Skills
The student will get the skills to:
- Apply versatile technical and analytical methods of work related to employment within the industry.
- Evaluate practical issues and commission solutions.
- Organize and plan daily work assignments in the profession.
- Disseminate practice-orientated issues and reasoned solutions.

Competencies
The student will learn to:
- Manage development-orientated practical and professional situations in relation to the profession and especially in relation to the internship company.
- Acquire new knowledge, skills and competencies in relation to the profession.
- Participate in disciplinary and interdisciplinary collaboration with a professional approach.

ECTS weight
The internship is worth 15 ECTS credits.

Number of exams
The internship is completed with 1 exam.

5. Requirements for the main exam project.

The final examination project together with the other exams and the internship test document that the education's goals for learning outcomes have been achieved.

The final examination project must also document the student's understanding of practice and central applied theory and method in relation to a practice-related problem. The problem must be based on a specific assignment in the field of education. The problem, which must be central to the education and the profession, is formulated by the student, possibly in collaboration with a private or public company. The institution must approve the problem.

Exams for the final exam project
The main exam project completes the program in the last semester once all the preceding exams have been passed.

ECTS weight

The main exam project is weighted 15 ECTS credits.

Examination form
The exam is an oral and written examination with an external co-examiner, a combined mark is given based on the 7-point scale for the written project and the oral presentation.

6. Rules on credit

Passed program elements are equivalent to similar program elements taken at other educational institutions offering this program.

The students are obliged to inform us of any completed educational elements from another Danish or foreign higher education program or any jobs which are likely to provide credit.

The Academy approves, in each instance, credit on the basis of completed program elements and any jobs which meet the objectives of the subjects, the educational part and the internship parts.

The decision is taken according to an academic assessment.

For prior credit approval of studies in Denmark or abroad, students are required to document each approved and completed program element on the completion of these studies.

In connection with applying for prior credit approval, the students give permission that the Academy can obtain the necessary information after the student's completion.

On approval according to the above, the program element is deemed to be passed if it was passed according to the rules of the program in question.

PART 2 – The institutional part

7. The education contains 4 local subject elements, including electives

In addition to the national subject elements, the program also includes local subject elements, totaling 30 ECTS. The local subject elements allow the student to qualify study and business skills through elective subjects, toning and perspectives of subjects that are broadly related to the field of study in the field of study.

Each year, the program offers a number of local subject elements in the form of electives, which are described in appendices to this curriculum. The institution is not required to carry out all the elective courses offered, but an appropriate number is carried out after a professional and capacity assessment.

7.1. Local mandatory subjects

7.1.1 Network and Infrastructure Automation

The NETWORK AND INFRASTRUCTURE AUTOMATION elective aims at giving students knowledge of-, skill to work with- and competencies to plan and implement automation solutions in modern and legacy computer networks. Students will learn how to analyze, break down and offer recommendations for implementing automation solutions in computer networks. Students will learn how to combine monitoring and logging capabilities with automation frameworks to design and implement policy- and rule based self-governing infrastructure for scaling, optimization and self-healing.

Learning objectives for NETWORK & INFRASTRUCTURE AUTOMATION
Knowledge
The student will obtain knowledge of:
- Computer Network infrastructure
- Automate, manage and connect all stages of an application lifecycle
- Monitoring and logging solutions

Skills
The student is able to:
- Apply knowledge of processes in computer networks to analyze and communicate recommendations for network and infrastructure automation solutions
- Apply knowledge of network and infrastructure automation processes for practical implementation projects
- Combine knowledge of computer networks with monitoring and logging solutions to define rules and policies for a higher degree of Network and Infrastructure Automation
- Test and validate existing network state

Competencies
The student will gain competencies that:
- Empowers the students to learn new subject matter and apply it with existing knowledge and experience in a context of Network and Infrastructure Automation
- Continuous compliance to check for network configuration drift
- Configuration automation of the network stack from system to access to core services

ECTS weight

Local subject of NETWORK & INFRASTRUCTURE AUTOMATION is worth 10 ECTS credits

7.1.2 Datacenter Technologies

The course aims to give the students practical and theoretical knowledge to understand cloud and hybrid solutions in datacenters. Structuring cloud solutions with Design Patterns – which will be used as foundation for choosing the right solution combination. Describing common cloud platforms and their usage for the students. Similarly, the students will know about various features of popular cloud platforms. Students must know how to take advantage of cloud programming paradigms. The students will also learn the concept of modern Big Data analysis on cloud platforms using various data mining tools and techniques.

Students get a set of skills enabling them to handle the common operation tasks in a Datacenter – this includes defining IT policies, strategies and procedures to actual building and configuration to common maintenance tasks. Common tools for datacenter maintenance such as backup, scripting and automation used in practical situations. During the course, we will build minor datacenters to illustrate and practice work on how to configure and set these up.

Content
- Cloud concepts, public, hybrid and private
- Enterprise Infrastructure
- Change management
- IT procedures, politics and strategies
- IT contracts
- Business Continuity

Learning objectives for Datacenter
Knowledge
The student will obtain knowledge of:
- Change Management in IT-Organizations.
- Standard tools for system operation and it-procedures, politics and strategies.
- Concepts for public, hybrid and private clouds.

Skills
- Configuration of Enterprise Infrastructure.
- Participate in creation of it-strategies and politics.
- Configure and utilize business continuity solutions
- Change Management in IT-Organizations

Competencies
- The student can gain competences using standard tools for system operation through structured learning.
- Assess technical cloud solutions based on the company and clients' requirements.
- Use standard tools for system operation including backup and virtualization.

ECTS weight
Local subject element Datacenter is worth 20 ECTS credits.

7.1.3 Cyber Security

The Cyber Security elective aims at giving the students the knowledge, skill and competence to function as an associate level security analyst in a NOC or SOC.

Learning objectives for Cyber security
Knowledge
The student will obtain knowledge of:
- Network Concepts
- Security concepts
- Cryptographical Concepts

Skills
The student is able to do:
- Host-Based and Network Intrusion Analysis
- Endpoint Threat Analysis and Computer Forensics
- Security Monitoring
- Penetration testing methods

Competencies
The student will gain competencies that:
- Allows the student to respond and handle security incidents
- Allows the student to utilize data and event analysis during incident analysis

ECTS weight
Local subject elective Cyber Security is worth 20 ECTS credits.

7.1.4 Software

The course aims to give students a thorough understanding of programming using Java. Students must understand software engineering concepts used to develop Object Oriented software with UML using the Unified Process, and to understand how to come from a problem to the final solution. This involves requirement capturing (Use Cases and non-functional requirements), analysis, domain models, interaction diagrams, design classes, design patterns etc. Overall the aim is to enable the students to understand and master the concepts and techniques of object-oriented system development and programming, including Client/Server programming and how this could be applied to embedded systems in an IoT setting.

Students will be introduced to basic theory of distributed systems and be able to design and implement a distributed system – and implement this on an embedded system.
These skills within programming must be applied in various embedded solutions with the inclusion of modern infrastructure and IoT setups.

Content
- Design principles and methods for software development
- Documentation and testing of software solutions at various stages in development
- Using various systems to design a complete solution such as
  - client/server systems
  - peer-to-peer systems
  - 3-tier architecture
  - rpc/rmi middleware
  - web services middleware

- Use object orientation in distributed/embedded systems
- concrete middleware systems for large and embedded systems
- interfacing cloud solutions and understanding these
- Implement solutions in Java using design patterns
- Implement solutions in Java using threads

Learning objectives for Software
Knowledge
The student will obtain knowledge of:
- Abstraction and understand UML
- S.O.L.I.D Design principles
- Unified Process
- Design principles
- Of differences between architecture design for embedded systems and larger systems.
- Requirement capturing
- Analysis vs. Design models
- Understand the difference between software development and coding
- Embedded programming limitations and possibilities
- Know various distributed system types (e.g. client/server, peer-to-peer)
- Knowledge of the 3-tier architecture
- Knowledge of various distributed communication methods

Skills
The student is able to:
- Analyze a problem and document the analysis and design for the solution in UML
- Practical use of UML and Unified Process
- Use UML to document requirements, analysis and design artefacts
- Use Unified Process in combination with agile software development
- Creating a domain model from a problem description and requirement specification and the elements in the model
- Create a design model and understand the elements within it
- Use the S.O.L.I.D principles on design models
- Apply design for test principles, both theoretically and practical
- Create and evaluate architectural design models in UML
- Apply and use various middleware (e.g. Java RMI, Web Services)
- Choose middleware for a given distributed system or embedded system.
- Implement thread-safe classes and multi-threaded programs
- Implement systems using client-server technologies
- Test software (e.g. stacks or queues) using different testing techniques, including (but not limited to) JUnit testing

Competencies
The student will gain competencies to:
- Understand a problem and be able to make a requirement specification with Use Cases and non-functional requirements
- Design the architecture of a distributed system using the 3-tier model
- Design and implement a distributed system and on different platforms using various middleware solutions
- Implement programs in Java using design patterns and middleware solutions

ECTS weight
Local subject element Software is worth 20 ECTS credits.

7.2. Examinations

When a student starts a subject element, semester etc. the student is at the same time signed up for the ordinary examination. The educational institution establishes, for each examination, a deadline for when a cancellation of the examination can take place. The education institution can in the curriculum establish that compulsory attendance and handing in assignments and projects etc. are a precondition for participation in an examination. The institution may establish that a cancellation cannot take place neither for entire educations or part of educations in this curriculum.

> For more information, see *Bekendtgørelse om prøver i erhvervsrettede videregående uddannelser* (The executive order on examination regulations), *Bekendtgørelse om karakterskala og anden bedømmelse ved uddannelser på Uddannelses-og Forskningsministeriets område* (The executive order on marking regulations), as well as **Dania Academy's Rules of Examinations.**

7.3. Examinations on the diploma

The following examinations will appear on the diploma for the education.

Place	The exams	Purpose	Assessment	Grade	ECTS
1st semester	Study start test	The purpose of the study start test is to determine whether the student has actually begun the program.	Internal	Pass/ not passed	
1st semester	1st semester exam	The test must document that the student has achieved certain learning objectives set for the 1st semester.	Intern	7 – trins skala	15
1st + 2nd semester	1st year exam	The test must document that the student has achieved the learning objectives set for the 1st year.	Ekstern	7 – trins skala	45
3rd semester	Exam in mandatory local subject	The test must document that the student has achieved the learning objectives set for the mandatory local subject.	Intern	7 – trins skala	10
	Exam in elective	The test must document that the student has achieved the learning objectives set for the elective.	Intern	7 – trins skala	20
4th semester	Internship exam	The exam must document that the student has achieved learning objectives for the internship.	Intern	7 – trins skala	15
	Exam in final project	The final examination project, together with the exam after the internship and the other exams of the program, must document that the objectives of the education for learning outcomes have been achieved. The exam can only take place after the final exam in internship and the other exams of the program have passed.	Ekstern	7 – trins skala	15

7.3.1 Description of the examinations

1st semester exam

Prerequisite requirements	Active participation in and approval of compulsory 1st semester learning activities.
Form	The first internal exam consists of a written assignment with oral defense, the purpose of which is to test the student in parts of the learning objectives from the first semester.
Placement	By the end of the 1st semester
ECTS points in total	15 ECTS
Learning objectives that are being tested and the related subject elements	Learning Objectives from "Network Technology, Embedded Systems, Programming and Project Management and Business Understanding": **Knowledge** The student will gain knowledge and understanding about: • Network security, including different products • Communication protocols and their use for different architecture • An overview of electronic modules, as well as how selected modules are built up • Internet of Things-techniques, construction generally and selected solutions in more details • Programming techniques in different types of language. • Project management in connection with development projects within IT. • How a company is organized, including the parts that control the company, as well as how one can describe the economic issues overall. **Skills** The student will get the skills to: • Apply network technology and hardware in connection with design, planning and implementation of complex, secure and sustainable network solutions. • Evaluate, select, adapt and use embedded systems and components in secure and sustainable solutions • Use tools and equipment related to the design, development and testing of program's. • Evaluate the complexity of a given technical problem. **Competencies** The student will learn to: • Participate in practice-orientated development processes in teams • Acquire new knowledge, skills and competencies within programming. • Participate in practice-orientated development processes in teams. • Manage planning and control their own technical tasks as well as engage in interdisciplinary projects.
Description of the examination	The test must document the student's achievement of the learning objectives in the subjects.
Duration	Will appear in the presentations for the examination(s).

Contents related extent (formalia)	The content of any written work (eg keystrokes and page numbers) or other products such as video elements, etc., which are included in the assessment, will be stated in the examinations for the test(s).
Evaluation	7-grade scale. Grade is marked on the diploma.
Evaluation criteria	Part grades are weighted equally.
Writing and spelling skills	Will appear in the presentations for the examination(s).
Language	English
Aids	All aids are allowed.
Precondition for participation in the examination	See section on participation requirements.
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

1st year exam

Prerequisite requirements	Active participation in and approval of compulsory 1st and 2nd semester learning activities.
Form	The first external exam consists of an overall assessment of several different performances from different activities (sub-tests) and an individual oral test.
	Part-test 1 50% of the grade is based on a written project with oral defense.
	Part-test 2 The ongoing assessment activities consist of a number of activities (sub-tests) over the first academic year. For each assessment activity, points are earned, which are converted into one overall grade, which weighs 50% of the grade for the first-year exam.
	During the first year of study, the students receive partial examinations in each of the three main subject areas, each weighing 1/6 of the 50% weighted by the ongoing assessment activities.
	When submitting without content, the student is awarded the lowest point score according to the table below.
	The weighting of the assessment activities follows the table below.
	<table><tr><th>Grade</th><th>Procentage</th></tr><tr><td>12</td><td>94-100%</td></tr><tr><td>10</td><td>85-93%</td></tr><tr><td>7</td><td>75-84%</td></tr><tr><td>4</td><td>60-74%</td></tr><tr><td>02</td><td>50-59%</td></tr><tr><td>00</td><td>31-49%</td></tr><tr><td>-3</td><td>0-30%</td></tr></table>
Placement	End of 2nd semester.

ECTS points in total	45 ECTS
Learning objectives that are being tested and the related subject elements	Learning objectives from "Network technology", "Embedded systems" and the following learning objectives from "Project management and business understanding":

Knowledge

The student will gain knowledge and understanding about:

- Network and server technologies overall, and the difference between physical and virtual technologies
- Operating systems as well as the difference between different systems
- Data management, including security
- Communication and interface technique in general, as well as how they are used in selected solutions
- Protocols including communication protocols, their structure as well as what differences and uses there are
- Applied technical mathematics within the subject area to understand electronics and/or communication
- Operating systems, their distinctive features and use
- A general understanding of signal management as well an understanding of how it is used and included in solutions
- Overall algorithms and design patterns and in connection with their selected programming language.
- What innovation is, and how to use innovative methods in problem solving
- Quality and resource management as part of a development project and as part of the management of maintenance of IT operations.
- Advisory and consultative functions when IT-specialists need to understand and solve the customer's needs.

Skills

The student will get the skills to:

- Apply network technological knowledge in connection with administration, operation and monitoring of complex network solutions
- Communicate and document tasks and solutions within networks
- Use tools and equipment related to the design, development and testing of solutions
- Evaluate network security in concrete products
- Build and use test systems
- Document and disseminate tasks and solutions with the use of embedded components and systems.
- Document, disseminate and support programming-related solutions in connection with internal and customer-facing relationships.
- Evaluate and select simple algorithms for solving specific problems.
- Communicate in writing and orally to both professional people and customers.
- Apply innovative problem-solving methods, with a focus on customer needs.

Competencies

The student will learn to:

- Manage analysis, needs identification, design, development and testing of secure network solutions

	• Manage planning and quality management of own network and server technology-related tasks • Acquire new knowledge, skills and competencies within network and server technologies • Participate in practice-orientated development processes in teams • Manage analysis, needs identification, design, development and testing of secure embedded and sustainable solutions • Manage the analysis, diagnostics, testing and servicing of the technology involved in working with electronic systems, taking into account financial, environmental and quality requirements • Acquire new knowledge, skills and competencies within the subject area • Manage the design, development and testing of larger solutions in multidisciplinary cooperation. • Handle customer tasks in order to convert customer needs into reliable solutions. • In a structured context, acquire new knowledge, skills and competencies by understanding companies and customers' use of IT.
Description of the examination	Written and oral group examination, where there must be no more than 2-4 students in a group.
Duration	Oral examination: 20 minutes are allocated per students in the group. The students in the group make a presentation of the project together after which there will be individual answering of questions based on the curriculum and the project. The presentation must take no more than half the time. It is up to the students themselves to ensure talking time for each member of the group during the presentation.
Contents related extent (formalia)	A project must be submitted. The project must have a maximum size of 35-40 standard pages for a group, regardless of group size. Front page, table of contents, bibliography and appendices do not count towards the required number of pages. Appendix will not be grades. A normal page is 2,400 keystrokes incl. spaces and footnotes.
Evaluation	The assessment comprises two parts. An individual overall grade given on the basis of an overall assessment of a written project and an oral performance, as well as a grade given on the basis of the points earned from the assessment activities. The exam and the ongoing assessment activities are judged according to the 7-step scale. On the basis of the two grades, an overall grade is given, with the exam itself weighing 50% and the ongoing assessment activities weighing 50% of the final grade for the first year exam. The exam is with external censorship. When calculating the weighted average of the continuous assessment activities and the exam grade, the average is rounded up if the average is at least midway between two marks on the grade scale. A total grade that is less than 02 is not rounded up.

	If the student does not pass the exam, the student must re-sit in the project section. The grade for the continuous assessment activities is transferred to the re-examination, regardless of whether the ongoing assessment activities have passed or failed, ie. regardless of whether the rating overall is above or below 02.
Evaluation criteria	The assessment criteria for the exam are identical to the learning objectives mentioned under "content".
Writing and spelling skills	If the project is not readable due to spelling and spelling errors, this may result in lower grades.
Language	English
Aids	All aids are allowed.
Precondition for participation in the examination	See section on participation requirements. The following prerequisites apply to the oral exam: All mandatory assignments must be approved. The written project, which comprises both assessment and examination / examination basis, must: • Fulfill formalities • Be delivered in a timely manner, cf. Examination plan
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

Exam in mandatory local subject

Prerequisite requirements	Passing of the 1st and 2nd semester and approval of compulsory learning activities on compulsory local subject.
Form	Based on a written project, the student is examined by an oral individual examination.
Placement	At the completion of the mandatory local subject element
ECTS points in total	10 ECTS
Learning objectives that are being tested and the related subject elements	Learning objectives for the exam are similar to the descriptions of the learning objectives for the compulsory local subject.
Description of the examination	Through work on a self-chosen problem in the elective, a report on the subject is prepared.
Duration	Will appear in the presentation
Contents related extent (formalia)	Will appear in the presentation
Evaluation	7-grade scale. Grade is marked on the diploma.
Evaluation criteria	Oral and written parts are equally weighted.
Writing and spelling skills	Formulating and spelling ability will be included as an overall assessment of the exam.
Language	English
Aids	Will appear in the presentation

Precondition for participation in the examination	See section on participation requirements.
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

Exam in elective

Prerequisite requirements	Passing of the 1st and 2nd semester and the compulsory local subject as well as the approval of compulsory learning activities on the elective.
Form	Based on a written project, the student is examined by an oral individual examination.
Placement	At the completion of electives
ECTS points in total	20 ECTS
Learning objectives that are being tested and the related subject elements	Learning objectives for the exam are similar to the descriptions of the learning objectives for the elective
Description of the examination	Through work on a self-chosen problem in the elective, a report on the subject is prepared.
Duration	Will appear in the presentation
Contents related extent (formalia)	Will appear in the presentation
Evaluation	7-grade scale. Grade is marked on the diploma.
Evaluation criteria	Oral and written parts are equally weighted.
Writing and spelling skills	Formulating and spelling ability will be included as an overall assessment of the exam.
Language	English
Aids	Will appear in the presentation
Precondition for participation in the examination	See section on participation requirements.
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

Internship exam

The table below concerns the concerned local provision's formal local guidelines on the completion of the internship

Prerequisite requirements	Passing of 1-3. semester and completion of internships and compulsory assignments related to internships: I. The internship is approved in accordance with current rules for internship.

	II. Draft business thank you letter III. Completion of final evaluation IV. Invitation to company to complete final evaluation if it fails V. The student must record their experiences through the internship in a journal.
Form	The exam is arranged as a combination of a poster (A3 or greater) and an oral presentation. The plan serves as a presentation for a presentation of a specific technical topic that the student has worked with during his / her internship and which can be linked to one or more learning objectives. If the student is practicing outside Denmark at the time of presentation - the exam can be taken as a video presentation, but still with a poster of the same format, this can be sent as a printable file to the teacher no later than two days before the exam.
Placement	At the end of the 4th semester internship.
ECTS points in total	15 ECTS
Learning objectives that are being tested and the related subject elements	Learning objectives according to the national curriculum for internships.
Description of the examination	The student must use the poster to make an oral presentation of the learning through the practice, in order to be tested orally in the learning objectives.
Duration	10 minutes are allocated for the oral presentation of the internship for each student.
Contents related extent (formalia)	There must be a description of which company and project has been worked on. The student must select a product / project that has been worked on in practice. There must be information on: • Business • Project / Product • Learning & reflection
Evaluation	7-grade scale. Grade is marked on the diploma.
Evaluation criteria	Poster and oral presentation are considered as a whole.
Writing and spelling skills	Formulating and spelling ability will be included as an overall assessment of the exam.
Language	English
Aids	All aids are allowed.
Precondition for participation in the examination	See section on participation requirements.
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

Exam in final project

Prerequisite requirements	In order to be admitted to the final project examination, the student must have passed all the tests/ exams during the three previous semesters of the program and the internship during the 4th semester.
Form	On the basis of a written project prepared in groups or individually, the student is examined at an individual oral examination with a background in the elaborated project.
Placement	By the end of the 4th semester
ECTS points in total	15 ECTS
Learning objectives that are being tested and the related subject elements	The exam in the final examination project must document that the objectives of the education for learning outcomes have been achieved. The project must be based on key problems in education. The problem statement for the project is prepared by the student and as far as possible in collaboration with a company. The project's problem statement must be approved by the supervisor.
Description of the examination	The purpose of the final examination project is that the student must document the ability to work on a methodical basis to be able to work on a complex and practical problem in relation to a specific assignment. The final exam project ends the program at the end of the 4th semester. The exam includes a written as well as an oral part.
Duration	45 minute individual oral exam
Contents related extent (formalia)	The project, which constitutes the written part of the exam, must contain something that looks like the following: • Front page with title • Table of contents • Introduction, including presentation of the problem statement, thesis statement and approaches • Background, theory, methodology, analysis, including a description of and justification for the choice of any empirical data1, in connection with the thesis statement • Conclusion (keep in mind that there must be coherence between the introduction and the conclusion. The two should in principle be able to be understood without reading the background and analysis sections) • The broader perspective • Bibliography (including all sources that have been referenced) • Appendices (only include appendices essential to the report). See table below. The front page, table of contents, bibliography and appendices do not count in the required number of pages. Appendices will not be assessed. One standard page is 2,400 characters, which includes spaces and footnotes. This does not include front page, table of contents, bibliography and appendices. Appendices will not be assessed.
Evaluation	7-grade scale. Grade is marked on the diploma.

Group size	Minimum	Maximum
1 student	20 pages	40 pages
2 students	35 pages	70 pages
3 students	50 pages	90 pages

Evaluation criteria	As described in the national curriculum.
Writing and spelling skills	Formulating and spelling ability will be included as an overall assessment of the exam.
Language	English
Aids	All aids are allowed.
Precondition for participation in the examination	See section on participation requirements.
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

7.3.2 Make-up examination, dispensation, cheating, complaints and special examination conditions

Dania Academy has established rules and procedures regarding special conditions concerning the completion of examinations. The rules and procedures will appear from **Dania's examination regulations which the student is expected to have read at the beginning of the 1st semester.**

The exam regulations include, among other things, rules and procedures in the following areas:

- When a student may attend a make-up examination
- When the student must pass the examination
- How the student should relate to physical or psychological disability
- Examinations taken abroad
- Complaints
- Cheating, plagiarism and disruptive behaviour during examinations etc.

7.4. Criteria for an evaluation of study activity

At Dania Academy we regularly follow up on the study activity of our students and the fulfillment of the prerequisite requirements of the examinations.

By study activity, it is understood that participation in the teaching (C1 teaching) has been registered and that this is over 90% overall, and if this is not met, the student will be called for a conversation to clarify the reasons for this. Subsequent, the student will be called back again if the absence still exceeds 10%. If the study activity is deemed not to be acceptable, the student may be deemed not to be study active and thus excluded from participating in future examinations.

Study activity is prerequisite for being entitled to the State Educational Grant and Loan Scheme (SU).

Study activity implies the student turning up for the obligatory examinations and handing in the obligatory assignments, projects etc. affiliated with the education. Furthermore, the study activity does imply that the student observes the compulsory attendance.

Mandatory assignments, projects, etc.
Mandatory assignments, projects etc. at the education must be handed in and approved so that the student can be study active and qualify for exams.

For each subject, a number of mandatory assignments or projects are to be solved in groups or individually and handed in. The scope of this must be kept within the already established workload of student activities in group work, lecture norms and structured assignment (in the K2 hours).
The content of these tasks must be adapted to the teaching and support of the learning objectives in the individual subjects. One assignment is sought per ETCS-point teaching, but this can be put together for major assignments depending on the teacher's preferences.

The teacher must professionally assess whether the assignments are resolved at a level that shows that the student has obtained an understanding of the subject to a minimum grade of 02. An assignment that will be able to obtain a grade of 02 or above is termed as approved. Mandatory assignments must be approved before the student can be admitted to the examinations.

7.4.1 Study-start test

1st semester students must participate and pass a study-start examination to continue on the education. The purpose of the study-start examination is to clarify, whether the student has actually started the education.

The study-start examination must be held 2 months after the beginning of the semester at the latest, and the result will be communicated to the student as passed/not passed respectively "approved" or "not approved" 2 weeks after the examination at the latest.

Has the examination not been passed, the student has the opportunity to participate in a re-examination, which will be held 3 months after the beginning of the 1st semester at the latest. The student will be given two attempts to pass the study-start examination. The examination is not subject to the rules in the executive order on examination regulations regarding complaints about examinations.

Should the student fail to pass the study-start examination n the student will be expelled from the education.

Prerequisite requirements	Recorded as a student at start of the study.
Placement	Before 1.10.20XX
Form	Written examination with internal assessment.
Placement	1st semester within 2 months from start of study.
Contents	The material that has been taught until the end of the test is tested.
Description of the examination	The test is a test at the knowledge level within the framework of the learning objectives taught since study start.
Duration	1 hour
Contents related extent (formalia)	The exam will be as a series of questions that need to be answered as best as possible. No content limit.
Evaluation	Internal assessment - passed / not passed, respectively "approved" or "not approved"
Evaluation criteria	Emphasis is placed on correctly answering the questions / questions, and part-credit is given for attempts to answer correctly.
Writing and spelling skills	If the written answer is unreadable due to spelling and spelling errors, this may result in lower grades.
Language	English
Aids	No aids allowed - either in the form of a closed electronic environment or paper.

Precondition for participation in the examination	Nothing
Deadline for cancellation	See Dania Academy's Executive order on examination regulations.

7.5. The study activity model

When a student starts at Dania Academy, he or she will be introduced to activities and a study programme, which may differ from what he or she has previously been introduced to elsewhere. It is expected that the effort contributed by the student is consistent with that of a fulltime occupation. The education is practice-based, which means that besides the internship course there will continuously be held meetings with the business/profession during the education.

Many different types of activities are included in a study. Some of these will be on the student's own initiative, others will be designed by the education. Some of these the students performs themselves, either alone or in a group of fellow students, others the students will perform together with the education's teaching staff, and others again will be performed together with companies, either during the internship, or in connection with company visits, projects etc.

The education on Dania Academy is organized based on the following model for study activity, where the activities are divided into 4 categories:

The following text boxes are associated with the four-quadrant circle diagram:

Category 1 – Participation by teacher and students – Initated by teacher (time and content)
- Lectures
- Dialogue in class
- Clear instructions for assignments
- Presentations in class
- Feedback (teacher/ peer-review)
- Tutoring group work (teacher check up with students)
- Study tours/ company visits with assignments
- Events
- Exam training
- Oral exam
- Study Technique

Category 2 – Paticipation by students – Initiated by teacher (time and content)
- Working in study groups with assignments
- Prepare presentations
- Prepare company visit/ study tour (desk research)
- Field research (study tour etc.)
- Feed back for other students
- Compare results and methods
- Exam (project work)

Category 4 – Participation by teacher and students – Initiated by student (time and content)
- Tutoring (student/ study group approach teacher for advice) example dialogue between student and Work Placement tutor.
- Input to debate in class (non-mandatory)
- Arranging events (mandatory and non-mandatory)

Category 3 – Participation by students – Initieres af studerende (time)
- Alone or in study group: Read and take notes
- Edit notes from class
- Prepare questions for class
- Work on assignments
- Søge informationer og supplerende litteratur
- Practice study technique
- Participate in sociale events

7.5.1 Teaching and working

The educations' knowledge base is business and profession based as well as development based. It being business and profession based involves that the education is based on new knowledge of central trends within the business or profession the education is aimed towards.

It being development based involves the education being based on new knowledge from experimental and developmental work that is relevant to the business or the profession, the education is aimed towards. The focus on the continuous development furthermore involves that the education is based on new knowledge from research units, relevant to the core areas that are constituent for the purpose and business purpose of the education.

Teaching Methods

It is up to the individual teachers to organize the teaching as best as possible with regard to the best possible learning outcomes. Thus, different approaches to the teaching can occur. Basically, teaching will be team-based, focusing on lectures and dialogue lessons followed by exercises and group work.

As far as possible there will be invited guest teachers from home and abroad who have practical experience from acquired or theoretical knowledge. Therefore, we will visit companies to see how problems are tackled in the industry. Case-based teaching with input from companies must also be expected in this context.

Materials will be introduced through online courses, and this will be expanded continuously so that it becomes a supportive form of learning so that practical cases and exercises can be used more when there is K1 teaching. The teachers will thus have a more coach / guiding role in relation to the learning.

7.6. Parts of the education that can be completed abroad

The education is thus organized that the student may complete parts of the education abroad within the prescribed period of study.

7.7. Rules on credit - the institutional part

The Rules for credit in the institutional part follow the rules on credit in the national part, see above.

7.8. Credit between the higher educations

Some Academy Profession programmes offer the possibility for credit, if you apply for certain undergraduate programmes. It may be both special credit courses, or credit during the ordinary courses, meaning you may start the courses later, for instance the 2nd year of study, or that you may skip some of the subjects during the education.

For further reading, see:
https://www.ug.dk/uddannelser/artikleromuddannelser/merit/merit-mellem-de-videregaaende-uddannelser

or contact the educational guidance counsellor for further relevant information.

7.9. Leave of absence

A student may take a leave of absence from the education for personal reasons. Further information on leave of absence, and the regulations on the student taking a leve of absence are to be found in the *executive order on admission to Academy Profession programmes and professional bachelor educations*.

7.10. Dispensation

The institution may, when it deems it justified because of unusual conditions, choose to grant dispensation from the regulations in the curriculum that are laid down by the institution or the institutions alone. The institutions cooperate on a uniform dispensation practice.

7.11. Current legislation

https://ufm.dk/lovstof/gaeldende-love-og-regler/uddannelser/erhvervsakademiuddannelser

8. Commencement and transitional schemes

This part of the national curriculum is valid from 01.09.2019 and is valid for students who are enrolled after 01.08.2020.

The newest version of the curriculum can be found on www.eadania.dk in the IT Technology section.