Education and Examination Guidelines

for the

International Datamatician Course

as defined by

Roskilde Computer Science College

Commencement as at 1 September 2004

Version 1.0

Academic Programme On
Advanced Computer Studies
Business Academy Roskilde

Business Academy, Roskilde

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0 Introduction

These Education Guidelines specify the subjects offered at the Advanced Computer Studies (Datamatician Course) at Roskilde Business College. The purpose and objectives of each subject will be described.

The subjects of the Education Guidelines fall into the compulsory major subject areas: Information Technology in Business Organisations, Systems Development, Programming and Technology. To these must be added the current individual stream with electives. The course is divided into 5 semesters, and each semester represents a theme binding the subjects together throughout the semester.

In connection with the objectives of each subject, reference has been made to the objectives of the subject areas. These objectives appear in the Appendix to the Ministerial Order.

The Examination Guidelines specify the exams to be passed during the course. The basis of each exam as well as assessment type and duration is detailed.

Each semester, a detailed implementation plan will be drawn up specifying the contents of the semester. It will detail the elements to be incorporated into each subject, and a detailed examination plan will be drawn up. The contents of the implementation plan will comply with the aims and objectives laid down in these guidelines.

Implementation plans are accessible to students.

1 Education Guidelines

These Education and Examination Guidelines are drawn up in accordance with Order no. 623, 28th June 2004, issued by Danish Ministry of Education on Academic Programme (AP) for Advanced Computer Studies (Datamatician Course, Datamatikeruddannelsen).

The Diploma Programme in Advanced Computer Studies is a short-cycle further and higher (post secondary) education (Danish: Kortere Videregående Uddannelse or short KVU)

The Diploma Course in Advanced Computer Studies is a practice-oriented, full time educational 2+1/4 year (27 months) Programme. One study year is defined as a full year's work for one full-time student. One study year is equivalent to 60 ECTS-points in the European Credit Transfer System. Thus the education is prescribed to a total of 135 ECTS-points.

The education is subordinate to the following laws and orders:

- **Law on KVU**: Law no. 1115 of 29th December 1997 on short-cycle, further and higher educations (business academy programmes).
- **Order on Education**: Order no. 623, 28th June 2004 on Academic Programme (AP) for Advanced Computer Studies (Datamatician AP).
- **Order on Quality**: Order no. 635, 30th June 2000 on Quality Development and Quality Control at the business academy programmes.

- **Order on Admission**: Order no. 154, 6th March 2000 on Admission, Enrolment and Leave etc. at further and higher educations and Order no. 591, 23rd June 2000 on Amendment of Admission, Enrolment and Leave etc. at further and higher educations.
- **Order on Exams**: Order no. 1021, 20th November 2000 on Examinations at certain further and higher educations subordinate to Ministry of Education.
- **Order on Marking**: Order no. 513, 22nd June 1995 on Marking Scale and other Evaluation.
- **Order on External Examiner**: Order no. 332, 25th May 1993 on the Institution for External examiners at certain further and higher educations subordinate to Ministry of Education.
- **Law on Open Education**: Law no. 508, 30th June 1993 on Open education etc.

The laws and orders are available at www.uvm.dk

2 Name of education and title of graduates

The Danish name of the education is *Erhvervsakademiuddannelsen inden for Informations-teknologi* (Datamatikeruddannelsen).

The English name of the education is *Advanced Computer Studies (Diploma Programme).*

The graduates of the education have the right to use the title *Datamatician AP* (*Datamatiker AK).*

3 The education, the goal

The goal of the Academic Programme for Advanced Computer Studies (*Datamatician Course Programme*) is to provide the student with the qualifications required for independently to analysis, plan and complete solutions concerning development and integration of IT-systems in private business enterprises and public institutions.

The graduate must be able to:

1) combine a basic understanding of the business enterprise and a knowledge of technical concepts with thorough skills and knowledge of programming and systems development
2) apply different principles and methods for planning, management and execution of the development process from idea and via implementation onto maintenance and administration
3) participate in management and co-operation with others with a different educational, linguistic and cultural background.

4 The Education, the subject areas

The Advanced Computer Studies consists of the following major disciplines/subject areas:

- Programming 40 ECTS
- Systems Development 30 ECTS
- Technology 20 ECTS
- IT in Business Organisations 10 ECTS
- Specialized Area 20 ECTS
- Final exam project 15 ETCS

The compulsory part of the education is the first four mentioned subject areas all stressing the essentially qualifications of a Datamatician AP. The core subject areas are Systems Development and Programming, whereas the other two subject areas are supporting subjects focusing on the context of applying Systems Development and Programming.
The individual part of the education is the two last mentioned subject areas where the Datamatician defines his/her own profile by reading different electives and writing a final dissertation.

The objectives of the different subject areas are described by the key words relating to the respective subject area. At the same time the key words reflect some of the working duties that a Datamatician AP will be able to perform after graduation.

4.1 The education, the compulsory part

4.1.1 Programming (40 ECTS)

Keywords

- Algorithms
- Templates, techniques and patterns
- Data structures and abstract data types
- Programming languages
- Program quality
- Program design
- Programming language theory
- Database programming
- Concurrency
- Distributed programming
- Software architecture

4.1.2 Systems Development (30 ECTS)

Keywords

- Modelling
- Method
- Pre-analysis
- Analysis
- Design
- Project work
- IT tools
- Experiments
- Quality

4.1.3 Technology (20 ECTS)

Keywords

- Storage management
- Processes
- Security

- Computer architecture
- Distributed systems
- Data transmission networks
- System architecture
- Databases
- Standard servers
- Technological development

4.1.4 Information Technology in Business Organisations (10 ECTS)

Keywords

- Organisation- and business enterprise understanding
- IT-based business concepts
- Frame systems for business management
- IT-development/investment
- Organisation and IT-security

4.2 The education, the individually part

The individual part consists of a Specialised Area with special subjects (electives) on 4thsemester and the final project exam (the dissertation) on 5th semester.

4.2.1 Specialised Area (20 ECTS)

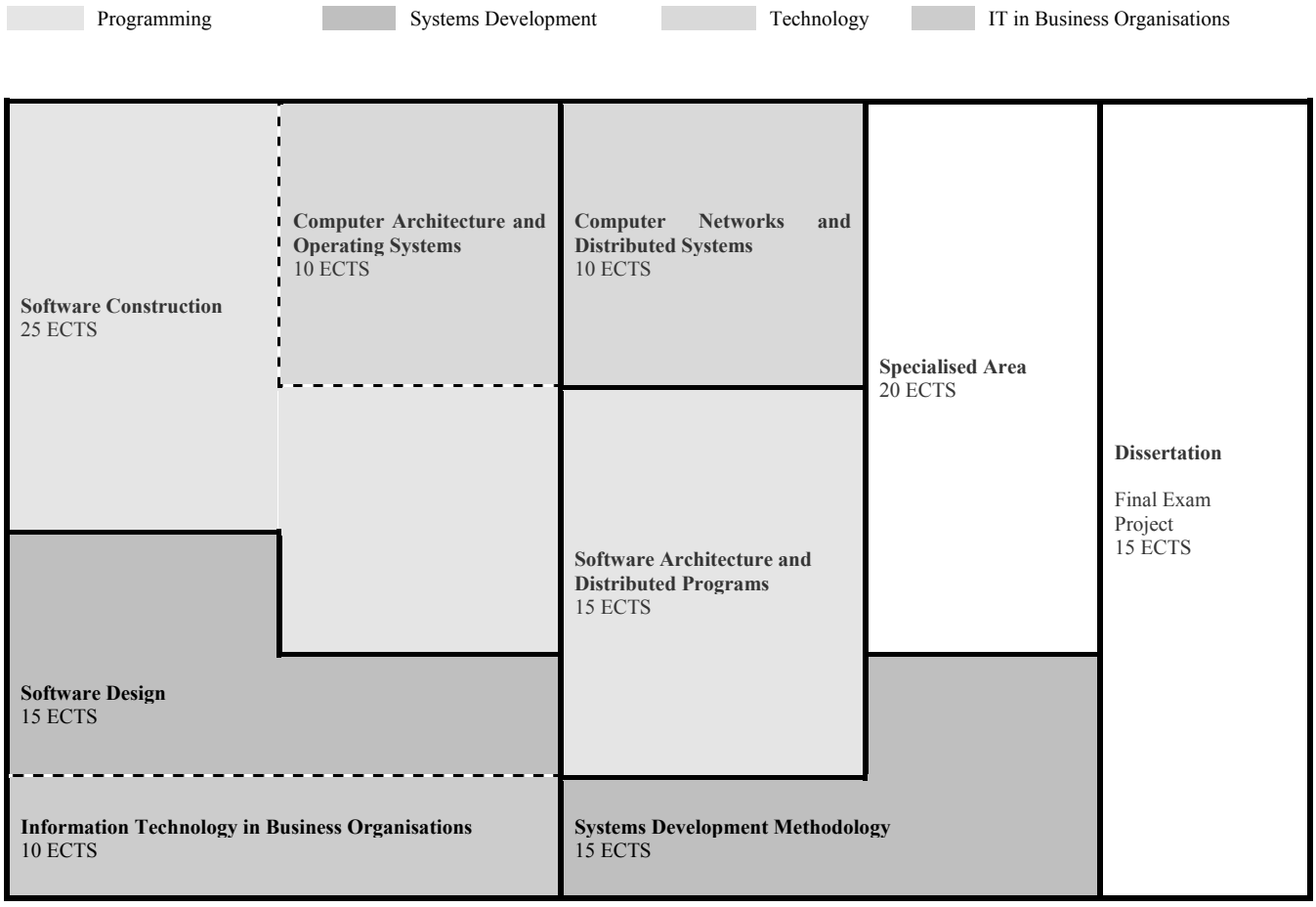
The Specialised Area provides the student the possibility of acquiring study competence and professional qualifications through specialisation and perspective of topics broadly related to the IT-domain.
The college implements this specialisation by defining and offering a certain amount of streams in accordance with the purpose of the education. A stream consists of one or more electives. In this connection the wishes of the students and the needs of the local business community must be taken into consideration. On individual basis the college can allow a student that the Specialised Area can take place at another educational institution (e.g. a university) or in a business enterprise.

4.2.2 Final Exam Project (15 ECTS)

In the dissertation, and based on an analytical and methodical basis, the student must document the skill to work on a complex and practical oriented problem in relation to a concrete assignment within the IT-Domain.
The dissertation must cover central topics of the education.

5 The education, the structure

The subject areas are running on one or over two semesters. The distribution of the subject areas are visualised in the figure below:



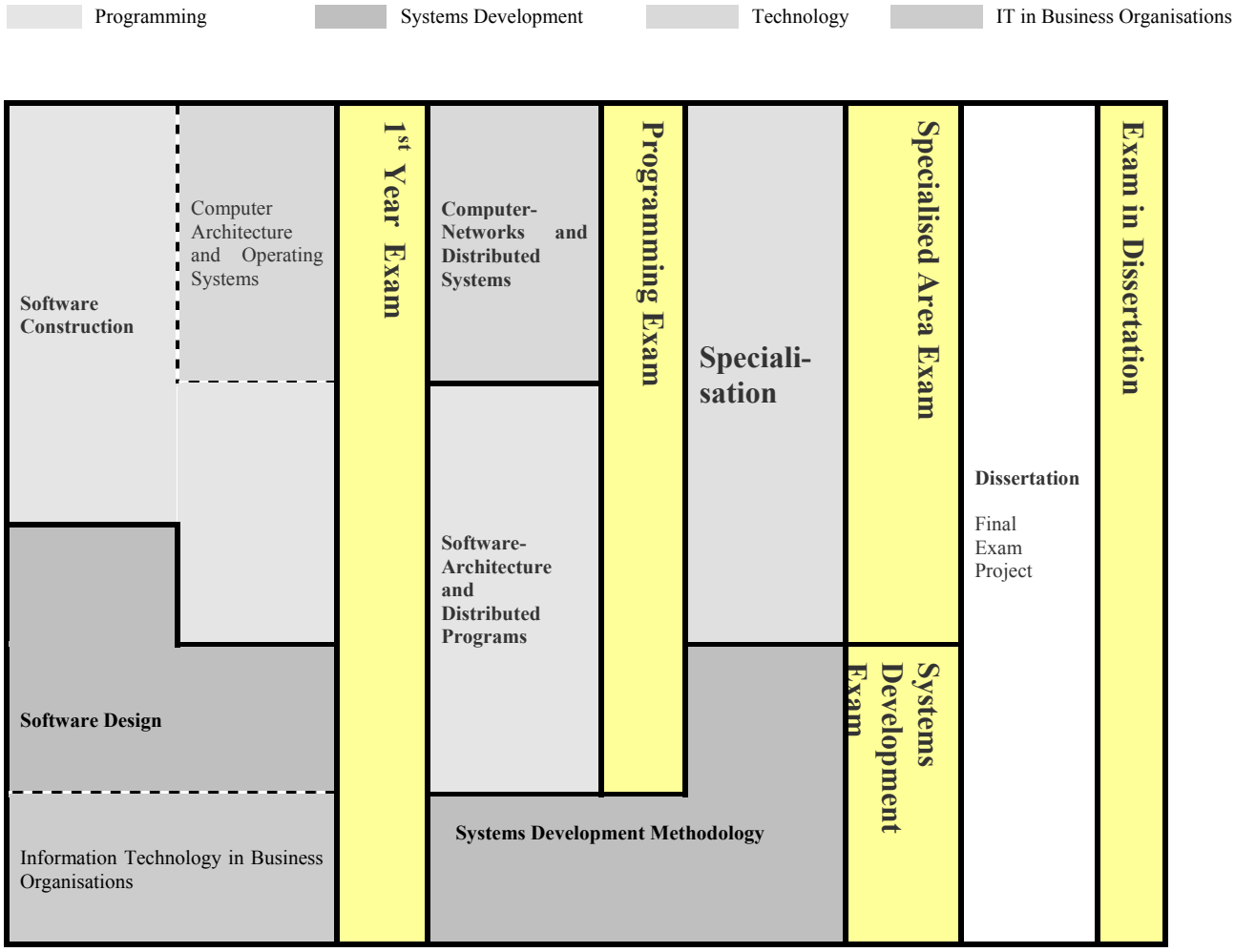
In the present Education and Examination Guidelines the concept "subject" is used for a collection of topics forming a teaching module and partly or fully forming the basis of one specific exam. At Business Academy Roskilde the education is divided into the following subjects:

- Software Construction
  Covering the two subject areas:
  Software Construction as well as Computer Architecture and Operating Systems
- Software Design
  Covering the two subject areas:
  Software Design as well as Information Technology in Business Organisations
- Computer Networks and Distributed Systems
- Software Architecture and Distributed Programs
- System Development Methodology
- Electives in the Specialised Area
- Dissertation
  Covering the subject area: Final Exam Project

6 The Examinations

6.1 The structure of the examinations

The examinations will be held after one or two semesters' teaching. The distribution of the examinations and the related subjects are visualised in the figure below:



6.2 Examination on 1st study year

Examination after 1st semester
There are no exams after 1st semester, but the student must be aware that the mandatory assignments given must be passed in accordance with the respective year's implementation of the guidelines.

Examination after 2nd semester. *Project examination*

Pre-requisites
At least 9 mandatory assignments must be passed.

Examination Curriculum

1. Curriculum from the subjects "Software Construction" and "Software Design"

Preparation- and examination period

1. Preparation period: 0 minutes.
2. Examination period: 30 minutes per project group plus 30 minutes per student including evaluation and marking.

Examination type

1. Project examination with the project work as a starting point.
2. The project work should cover essential topics from 1st study year.

Project size and type

1. The project size is 12 ECTS point
2. The project is completed in project groups on the basis of a project foundation provided by the college.
3. The project is a controlled project with application of the methods, techniques and tools used in the teaching.

Before the exam

1. The completed project report (maximum 60 standard pages) as well as programs on a CD-Rom is handed in.
2. Before the examination commences, the external examiner and the examiner evaluate the project reports on the 13-scale (this mark is not made public).

Permitted resources

1. Not of importance in this examination.

Course of the exam

1. The students present the result of the project work. If appropriate a demonstration of the developed system can be given. This must not take more than 30 minutes totally.
2. The examiners examine the project group by performing an individual examination of each student.
3. The oral presentation and defence of each student is evaluated by the external examiner and examiner on the 13-scale (this mark is not made public).
4. The student is given one single mark, based on an overall evaluation of both the project report and the oral part of the examination.

Assessment

1. By the 13 scale

6.3 Examination on 2nd study year

Examination after 3rd semester: *Oral Programming examination*

Examination Curriculum

1. Curriculum from the subject area "Programming" as well as the subject "Computer Networks and Distributed Systems"

Preparation- and examination period

1. Preparation period: 80 minutes.

2. Examination period: 40 minutes per student including evaluation and marking.

Examination type
1. Oral examination with a major and a minor question.
2. The questions should cover both theoretical and practical elements.

Before the exam
1. Not of importance in this examination.

Permitted resources
1. All resources are permitted, with the exception of any form of communication with others that might aid the candidate in answering the question

Course of the exam
1. The student draws a major question in the subject area "Programming" and a minor question in the subject "Computer Networks and Distributed Systems"
2. The student prepares an individual defence of the questions in 80 minutes.
3. The student answers the examination questions.
4. The examiners examine the student.
5. The oral defence and presentation of each student is evaluated by the external examiner and examiner on the 13-scale.
6. The student is given one single mark, based on the major question (app. weighting 80%) and the minor question (app. weighting 20%)

Assessment
1. By the 13 scale

Examination after 4th semester: *Systems Development Project Examination*

Examination Curriculum
1. Curriculum from the subject area "Systems Development", especially the subject "System Development Methodology"

Preparation- and examination period
1. Preparation period: 0 minutes.
2. Examination period: 30 minutes per project group plus 30 minutes per student including evaluation and marking.

Examination type
1. Project examination with the project work as a starting point.
2. The project work should cover essential topics from the study year.

Project size and type
1. The project size is 6 ECTS point
2. The project is completed in project groups normally with 3-4 participants.
3. The project is a self defined project within the objectives and frames of the subject.

Before the exam
1. The completed project report (maximum 40 standard pages) is handed in.
2. Before the examination commences, the external examiner and the examiner evaluate the project reports on the 13-scale (this mark is not made public).

Permitted resources

1. Not of importance in this examination.

Course of the exam

1. The students present the result of the project work. This must not take more than 30 minutes totally.
2. The examiners examine the project group by performing an individual examination of each student.
3. The oral presentation and defence of each student is evaluated by the external examiner and examiner on the 13-scale (this mark is not made public).
4. The student is given one single mark, based on an overall evaluation of both the project report and the oral part of the examination.

Assessment

1. By the 13 scale

Examination after 4th semester: *Specialised Area Examination*

Examination Curriculum
Curriculum from the electives within the subject "Specialised Area"

Preparation- and examination period

1. In accordance with the defined examination type.

Examination type

1. To be defined in accordance with the implementation of the electives.

Before the exam

1. In accordance with the defined examination type.

Permitted resources

1. In accordance with the defined examination type.

Course of the exam

1. In accordance with the defined examination type.
2. The student is given one single mark.

Assessment

1. By the 13 scale

6.4 Examination on 3rd study year

Examination after 5th semester: *Examination in the Final Exam Project (Dissertation)*

Examination Curriculum

1. Not of importance in this examination

Preparation- and examination period

1. Preparation period: 0 minutes.

2. Examination period: 30 minutes per project group plus 20 minutes per student including evaluation and marking.

Examination type

1. Project examination with the project work as a starting point.
2. The project work should cover the relevant essential topics from the two study year.

Project size and type

1. The project size is 15 ECTS point
2. The project is completed in project groups of normally up to 3 students.
3. The project is a project with application of the methods, techniques and tools used in the teaching on the first two study years.
4. The product of the dissertation can be a program, a system, an analysis or an investigation.
5. The goal and domain of the dissertation is formulated by the group in close co-operation with the college and if possible with a business enterprise.

Before the exam

1. The completed project report (maximum 100 standard pages) as well as relevant programs on a CD-Rom is handed in.
2. Before the examination commences, the external examiner and the examiner evaluate the project reports on the 13-scale (this mark is not made public).

Permitted resources

1. Not of importance in this examination.

Course of the exam

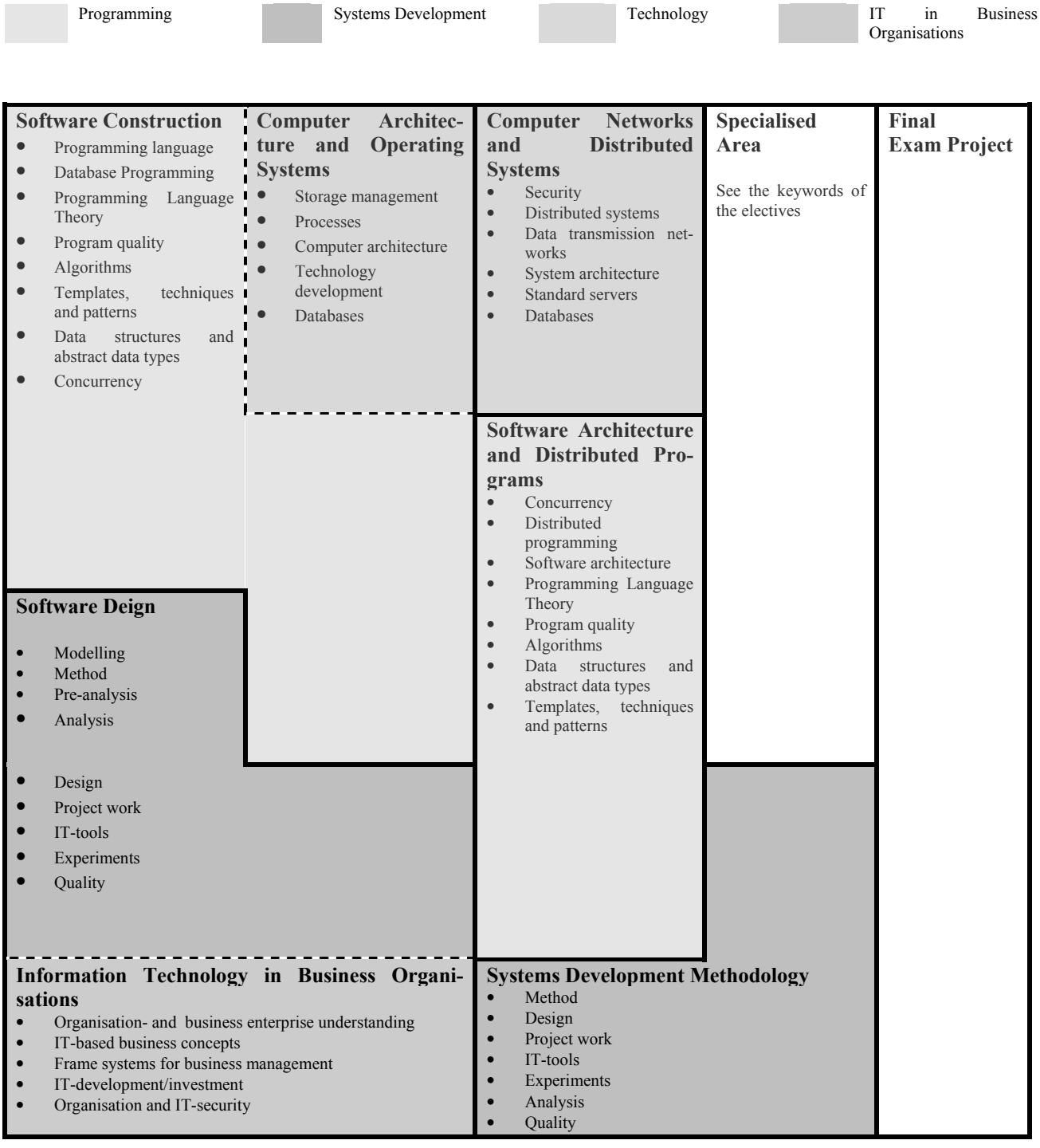
1. The students present the result of the project work. If appropriate a demonstration of the developed system can be given. This must not take more than 30 minutes totally.
2. The examiners examine the project group by performing an individual examination of each student.
3. The oral presentation and defence of each student is evaluated by the external examiner and examiner on the 13-scale (this mark is not made public).
4. The student is given one single mark, based on an overall evaluation of both the project report and the oral part of the examination.

Assessment

1. By the 13 scale

7 The Education, the subjects, aims and objectives

The subject areas are running on one or over two semesters. The distribution of the subjects and the related keywords are visualised in the figure below:



7.1 1st Study year, the purpose:

The purpose of the 1st study year is to give the student competence -independently and in cooperation with others- to develop single user systems. Professional the study year spans from pre-

analysis onto administration and operation. This is gained by a systematically approach incorporating technological and business oriented aspects.

7.1.1 The subject Software Construction 1. & 2. semester

Aim

The aim is to qualify the student to:

- efficiently to implement systems with relevant quality.
- contribute with choices and application of technology in relation to development and programming of single user and muti user IT-systems
- have a basic knowledge of technological aspects.

Software Construction 1. Semester

Contents

Programming language

The objective is that the student

1. can use the language for the implementation of algorithms, templates, patterns, abstractions and data structures
2. can apply the language for implementation of design models
3. can apply program libraries related to the language
4. can apply the language and related program libraries for the implementation of user interfaces
5. can apply a development environment related to the language

Programming language theory

The objective is that the student

1. has knowledge of a description of syntax and semantics of a programming language
2. has know-how of type systems and abstraction mechanisms in a modern programming language

Program quality

The objective is that the student

1. has know-how on criteria for program quality
2. can apply means and tools to gain quality programs

Algorithms

The objective is that the student

1. can specify and state algorithms

Templates, techniques and patterns

The objective is that the student

1. can apply fundamental algorithm templates and programming techniques

Technological development

The objective is that the student

1. has knowledge of the technological development including future development trends

Storage management

The objective is that the student
1. has knowledge of the importance of storage management for the program scheduling
2. has knowledge of facilities in modern file systems

Computer architecture
The objective is that the student
1. has knowledge of the layered computer and the principles of interaction between the layers
2. can understand, how the underlying layer support constructions in the programming language

Software Construction 2. Semester

Contents

Programming language
The objective is that the student
1. can use the language for the implementation of algorithms, templates, patterns, abstractions and data structures
2. can apply the language for implementation of design models
3. can apply program libraries related to the language
4. can apply the language and related program libraries for the implementation of user interfaces
5. can apply a development environment related to the language

Database programming
The objective is that the student
1. can implement models in a database system
2. can construct programs using a database interface
3. can apply DDL and DML of a database system

Algorithms
The objective is that the student
1. can specify and state algorithms
2. can understand both qualitative and quantitative characteristics of algorithms

Templates, techniques and patterns
The objective is that the student
1. can apply fundamental algorithm templates and programming techniques
2. can apply central design patterns

Data structures and abstract data types
The objective is that the student
1. has knowledge of both the qualitative and quantitative properties of classical external and internal data structures
2. can choose and apply suitable data structures to implement abstract data types
3. can apply classical abstract data types for the construction of programs
4. can understand specification and implementation of abstract data types
5. can perform a qualified choice among the various abstract data types

Concurrency
The objective is that the student

1. can design and construct a program as inter-operative processes
2. can apply techniques for the construction of programs with several concurrent users

Processes
The objective is that the student
1. can understand the organisation and the scheduling of processes and threads
2. can apply communication mechanisms and principles for resource sharing

Databases
The objective is that the student
1. can understand facilities and operation mode of a modern database, including the handling of transaction
2. can understand how requests are scheduled by the database server

7.1.2 The subject Software Design 1. & 2. Semester

Aim
The aim is to qualify the student to:
- participate in innovation, further development and integration of different types of IT-systems on a systematic basis and using a specific modern method and related systems development tools.
- secure an efficient development of proper IT-systems with relevant qualities
- incorporate the relevant business aspects as well as business understanding in connection/relation to systems development.
- work in a systems development organisation as well as to participate in development, further development and integration of IT-systems for different types of organisations

Software Design 1. Semester

Contents

Modelling
The objective is that the student
1. can understand the significance of modelling in relation to systems development
2. can apply tools and techniques for construction of re relevant models
3. can work out pattern based models

Method
The objective is that the student
1. can apply a systems development method of current interest

Pre-analysis
The objective is that the student
1. can apply methods for description and analysis the business domain and procedures in the business enterprise

Analysis
The objective is that the student
1. can undertake analysis of a the domain of the systems development in order to understand business and technological conditions as well as to define requirements

Design
The objective is that the student
1. can design an overall architecture of a system
2. can design user interfaces

Project work
The objective is that the student
1. can participate as a competent participant in a development project

IT-tools
The objective is that the student
1. can apply IT-tools supporting activities in the course of systems development

Quality
The objective is that the student
1. can understand the importance of quality criteria for the systems development process and the final design of the system

Organisation- and business understanding
The objective is that the student
1. can understand structures in an organisation and the factors determining the structure of the organisation
2. can understand management- and business processes in the business enterprises
3. can understand management types including project management as well as the behaviour of persons and groups in the organisation
4. can understand organisational modification processes in connection with application of new IT-systems

Frame systems to business management
The objective is that the student
1. has knowledge of frame systems' characteristics, structure and operation mode
2. has knowledge of the economical concepts well as the principles and methods for registration of management's information
3. has knowledge of analysis techniques for uncovering the needs for adjustments of frame systems
4. can apply models describing systems of the business enterprises systems

Software Design 2. Semester

Contents

Modelling
The objective is that the student
1. can understand the significance of modelling in relation to systems development
2. can apply tools and techniques for construction of re relevant models
3. can work out pattern based models

Method

The objective is that the student

1. can apply a systems development method of current interest
2. can apply techniques incorporating users in the systems development

Pre-analysis
The objective is that the student
1. can apply methods for description and analysis the business domain and procedures in the business enterprise
2. can formulate the business enterprise's needs for IT-systems
3. can understand innovation process, and participate in the work out of visions for new IT-solutions

Design
The objective is that the student
1. can design an overall architecture of a system
2. can design user interfaces
3. can design suitable IT-systems and can evaluate different solutions in relation to requirements and conditions
4. can design databases

Project work
The objective is that the student
1. can participate as a competent participant in a development project

IT-tools
The objective is that the student
1. can apply IT-tools supporting activities in the course of systems development

Experiments
The objective is that the student
1. can understand the relevance of experiments as a part of or as a supplement to systems development methods
2. can apply experiments systematically uncovering the user requirements

Quality
The objective is that the student
1. can understand the importance of quality criteria for the systems development process and the final design of the system
2. can ensure the quality of product and process

IT-based business concepts
The objective is that the student
1. can understand it base business concepts
2. has understanding of business strategy in order to formulate an IT-strategy
3. can describe systems supporting business strategies and IT-strategies

IT-development/Investment
The objective is that the student
1. can understand and describe the consequences of IT-development/investment
2. has know-how on the procedures for implementation of IT-systems

Organisation and IT-security
The objective is that the student
1. can analyse the organisation of IT-security in a business enterprise

2. can understand the significance of the organisational structure for the IT-security
3. has know-how on risk evaluation and evaluation of vulnerability

7.2 2nd Study year, the purpose:

The purpose of the 2nd study year is to give the student competence -independently and in cooperation with others- to evaluate the IT-development opportunities of a business enterprise.
And on the basis of this to develop, renew and maintain a distributed system from pre-analysis onto administration and operation. This is gained by a situation based, methodologically and systematically approach incorporating technological aspects.

7.2.1 The subject Systems Development Methodology 3. & 4. Semester

Aim
The aim is to qualify the student to:

- participate in innovation, further development and integration of distributed IT-systems on a systematic basis and using a specific modern situation based methods and related systems development tools.
- secure an efficient development of proper IT-systems with relevant qualities

Systems Development Methodology 3. Semester

Contents

Analysis
The objective is that the student

1. can undertake analysis of a the domain of the systems development in order to understand business and technological conditions as well as to define requirements

Design
The objective is that the student

1. can design suitable IT-systems and can evaluate different solutions in relation to requirements and conditions
2. can design an overall architecture of a system
3. can design centralised as well as distributed systems with several concurrent users

Quality
The objective is that the student

1. can ensure the quality of product and process

Systems Development Methodology 4. Semester

Contents

Method
The objective is that the student
1. has knowledge of other systems development methods, including previously, widespread used methods as well as promising new methods
2. can choose and/or adjust a method on the basis of a given situation

Design
The objective is that the student
1. can design suitable IT-systems and can evaluate different solutions in relation to requirements and conditions

Project work
The objective is that the student
1. can participate as a competent participant in a development project
2. can understand the characteristics of an project organisation
3. can manage and control minor systems development projects
4. has knowledge of a wide range of process models
5. can choose and/or adjust a process model on the basis of a given situation; i.e. draw up a project strategy

IT-tools
The objective is that the student
1. can apply IT-tools supporting activities in the course of systems development

Experiments
The objective is that the student
1. can understand the relevance of experiments as a part of or as a supplement to systems development methods
2. can apply experiments systematically to investigate the technologically possibilities and limitations

Quality
The objective is that the student
1. can ensure the quality of product and process

7.2.2 The subject Software Architecture and Distributed Programs 3. Semester

Aim
The aim is to qualify the student to:
- efficiently to implement distributed systems with relevant qualities.
- have a thorough knowledge of distributed programming aspects.

Contents

Concurrency
The objective is that the student
1. can design and construct a program as interoperating processes
2. can apply techniques for the construction of programs with several concurrent users

Distributed programming

The objective is that the student

1. can design and construct programs based on interoperating processes in a distributed architecture
2. can construct programs using networks interface

Software Architecture

The objective is that the student

1. can apply patterns for software architectures
2. can apply and develop software components

Programming Language Theory

The objective is that the student

1. has know-how of type systems and abstraction mechanisms in a modern programming language

Program quality

The objective is that the student

1. can apply means and tools to gain quality programs

Algorithms

The objective is that the student

1. can specify and state algorithms
2. can understand both qualitative and quantitative characteristics of algorithms

Templates, techniques and patterns

The objective is that the student

1. can apply fundamental algorithm templates and programming techniques
2. can apply central design patterns

Data structures and abstract data types

The objective is that the student

1. has knowledge of both the qualitative and quantitative properties of classical external and internal data structures
2. can choose and apply suitable data structures to implement abstract data types
3. can apply classical abstract data types for the construction of programs
4. can understand specification and implementation of abstract data types
5. can perform a qualified choice among the various abstract data types

7.2.3 The subject Computer Networks and Distributed Systems 3. Semester

Aim

The aim is to qualify the student to:

- contribute with choices and application of technology in relation to systems development and programming of distributed IT-systems
- have a thorough knowledge of technological aspects.

Contents

Security
The objective is that the student
1. has knowledge of principles for building up error tolerant systems
2. can apply standard components to secure communication
3. can understand central security concepts including authorisation, authentication, confidentiality and revision tracking
4. has knowledge of the major threads of technical character and understands how these threads can be avoided

Distributed systems
The objective is that the student
1. can understand principles for the design and implementation of distributed systems
2. can apply widely used application protocols for construction of distributed systems
3. can understand techniques for integration of heterogenic systems

Data transmission networks
The objective is that the student
1. has knowledge of a layered communication model
2. can apply a programming interface for communication networks
3. can understand networks addressing
4. has knowledge of net types and components in the network

System architecture
The objective is that the student
1. can analyse architectures and choose between different proposals for solution of a given assignment

Standard servers
The objective is that the student
1. can understand the functionality of various types of standard servers including web-servers, application-servers and component containers
2. can utilise services provided by standard servers

Databases
The objective is that the student
1. can understand facilities and operation mode of a modern database, including the handling of transaction
2. can understand how requests are scheduled by the data base server

7.2.4 Specialised Area 4. Semester

Aim
The aim is to provide the student with:
- a personal educational profile through specialisation and perspective of topics broadly related to the IT-domain.

Contents
The college implements this specialisation by defining and offering a certain amount of streams in accordance with the purpose of the education. A stream consists of one or more electives. The student will make a personal choice among these streams On individual basis the college can allow

a student that the Specialised Area can take place at another educational institution (e.g. a university) or in a business enterprise in Denmark or abroad.

7.3 The Dissertation 5. Semester

Aim
The aim is to qualify the student:

- to document the skill -based on an analytical and methodical basis- to work on a complex and practical oriented problem in relation to a concrete assignment within the IT-Domain.

Contents
The dissertation must cover central topics of the education.
The project size must be equivalent to 15 ECTS-points. .

8 Rules and regulations

8.1 Mandatory pre-requisites

Internal exams
There are at the moment no internal exams.

Mandatory assignments
There are a number of individually, written mandatory assignments during the 1st study year. As a minimum the student must pass 9 of these assignments in order to be admitted to the 1st year examination.

8.2 Examination enrolment

The student must in writing and in good time enter to the examinations and re-examinations (due to a not pass in the ordinary examination) and or due to illness) using the official enrolment paper.

8.3 Re-examinations

It is the aim of the college that all kind of re-examinations are held before or in the beginning of the following semester.

The student has the right to sit for two re-examinations. It is a pre-requisite for participation in a re-examination, that the student participated in the ordinary examination and was given a non-passed mark (00, 03 or 5) or could not participate due to illness.

The first re-examination is held not later than the new ordinary examination in the following examination period.
The second re-examination is normally held next time the course has been offered at the college.

A re-examination is only possible for the examination types: written examination and oral examination/-defence.
The re-examination will be given with at least two weeks warning. An external examiner (”censor”) will always be assigned the re-examinations.
An individual and written enrolment is required.

8.4 Complaints on examinations

Complaints on examinations and other evaluations included in the examination, is handed in by the student to the college. The complaint must be written and reasons must be stated.

The complaint must be received not later than two weeks after the evaluation has been published. The respite of two weeks is however counted not earlier than the date announced for publication of evaluation in accordance to § 22, no. 2 and 3 in the ministerial order of examination.

8.5 Teaching- and working types

The teaching is completed as a combination of class teaching, lectures, workshops, study readings, exercises and project works. The starting point for the planning of the teaching is relevant practice and applied theory.

The education will include teaching types developing the student’s independence, interpersonal skills and innovative skills.

When relevant the education will include readings on innovation culture, environmental problems and the inter play between different cultures.

8.6 The duty of participation in the teaching

It is a requirement that the student is both study active and an active participant in the mandatory projects and assignments, cf. the mandatory pre-requisites. Additional rules are given the rules of the college.

8.7 Rules on course concession

There is a direct course concession of the first study year between institutions offering the Advanced Computer Studies. Thus the educations at the institutions are equivalent to each other.

Verified agreements on course concession are available on www.erhvervsakademierne.dk or on the home pages of the college.