

**CURRICULUM FOR
THE MASTER'S PROGRAMME IN HUMAN CENTRED
INFORMATICS**

**FACULTY OF HUMANITIES
AALBORG UNIVERSITY**

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INDHOLDSFORTEGNELSE

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CURRICULUM FOR THE MASTER'S PROGRAMME IN HUMAN CENTRED INFORMATICS AT AALBORG UNIVERSITY

In pursuance of law no. 403 of 28 May 2003 on universities (the University Act) with later amendments the following curriculum is stipulated for the master's programme in Human Centred Informatics at Aalborg University.

PART 1 PRELIMINARY REGULATIONS

Section 1 Legal foundation

The master's programme (candidatus degree) in Human Centred Informatics is planned pursuant to the Ministry of Science, Technology and Innovation's ministerial order no. 338 of 6 May 2004 on bachelor's and master's programmes at universities (the study programmes order) and ministerial order no. 867 of 19 August 2004 on examination at universities (the examination order), with later amendments. Furthermore, reference is made to the ministerial order on the grading scale, the ministerial order on external examiners, and the ministerial order on admission.

Section 2 Faculty affiliation

The master's programme in Human Centred Informatics belongs under the auspices of the Faculty of Humanities.

Section 3 Study board affiliation

The master's programme in Human Centred Informatics belongs under the auspices of the Study Board for Human Centred Informatics.

PART 2 OBJECTIVES, DURATION, STRUCTURE, ETC.

Section 4 Objectives

The master's programme in Human Centred Informatics is a research based, full-time programme, which provides students with the basis for the execution of professional work and qualifies for admission to PhD studies. The language of instruction is English.

Subsection 2

The master's programme in Human Centred Informatics aims at equipping candidates with a theoretically and methodologically based competence in ensuring sustainability in the application of information and communication technology (ICT). In this context, sustainability is construed as ICT solutions that have been considered in relation to a wide spectrum of solutions and variables, including their adaptation to users and the organizational contexts into which they will enter.

The master's programme in Human Centred Informatics builds on and supplements the knowledge and skills that the student has acquired in the course of the preceding bachelor education. The object of study for Human Centred Informatics is ICT systems, their theoretical basis and their integration in organizations and enterprises. Particular emphasis is given to learning and knowledge processes in relation to ICT. The programme is based on the following areas of knowledge: ICT, learning and collaboration; knowledge and formalization; design and system development; and human-computer interaction. ICT is considered as socially integrative technological networking, with the ethical and aesthetical challenges that follow from this. The

student is enabled to command the theories, methods and applications of the field. Through the master's programme

the student is offered the opportunity to specialise in ICT in relation to specific sectors, organizations and enterprises that work with language, health, learning and education, government services, etc.

Subsection 3

The general **intellectual competence goals** are expressed in the student's ability:

- independently, systematically and critically to formulate and analyse disciplinary problems through the application of scientific theories and methods
- independently, systematically and critically to assess and adapt scientific theories and methods of the discipline
- creatively to explore new technical potentials and create new solutions
- to mediate between diverse professions and professional functions in relation to problems in information science
- to continue his/her own competence development and independently update his/her knowledge within the discipline.

Subsection 4

The general **professional competence goals** are expressed in the student's attainment of theoretical, analytical and constructive competences in sustainable ICT based on perspectives informed by history, ethics, culture, and the philosophy of technology. This competence is constructed through studies within the following areas of knowledge:

- ICT, learning and collaboration
- knowledge and formalization
- design and system development
- human-computer interaction.

Subsection 5

The general **practical competence goals** are expressed in the student's ability to undertake the following tasks within work related to ICT systems:

- development, design and construction
- formalization, organization and categorization
- project management, implementation and commissioning
- teaching, consultancy, learning and communication
- needs surveys, socio-technical analyses and evaluation
- communication and collaboration with user groups, interested parties and authorities.

Subsection 6

The master's programme in Human Centred Informatics with competence in sustainable ICT qualifies the student to work with:

- project management
- software development
- ICT implementation and use
- analysis and consultancy
- teaching and programme development.

Section 5 Duration, structure and designation

The duration of the master's programme in Human Centred Informatics is two years, equivalent to 120 ECTS points.

Subsection 2

The master's programme spans four semesters (7th to 10th semesters). The 9th semester consists in either a project orientated placement in a relevant enterprise or organization working in a national or international context, or in theoretical studies in ICT systems in practice. In the 9th semester the student is furthermore given the opportunity to emphasise particular aspects of the programme through elective modules offering course activities within a number of subject areas. The 10th semester is reserved for work on the master's thesis.

Subsection 3

On completion of the master's programme, the student is awarded the degree of *cand.mag.* (*candidatus/candidata magisterii*) i *Informationsvidenskab*. The English-language title is *Master of Arts (MA) in Human Centred Informatics*.

Section 6 Admission

Admission to the master's programme is reserved for students with a completed bachelor degree in Human Centred Informatics or another relevant academic bachelor degree. A relevant bachelor degree is defined as a degree from a bachelor programme whose central subject areas give competence to an extent equivalent to not less than 45 ECTS points within the disciplinary area of information science (communication theory, theory of science and epistemology, ICT, learning and organizational theory, programming methods, design and human-computer interaction), or a programme in which not less than 60 ECTS points are identical to the bachelor programme in Human Centred Informatics.

Subsection 2

A further condition is that the student, whether he or she is a speaker of Danish or English, fulfils the University's general minimal requirements for proficiency in English that apply for acceptance into English-language programmes.

Subsection 3

Applicants who do not fulfil the conditions stipulated in subsections 1 and 2 may be accepted on condition that the Study Board, on the basis of an assessment of the case in question, considers that the applicant possesses comparable educational and language qualifications. In such cases, the Study Board may call in the applicant for an interview.

PART 3 **PROGRAMME ORGANIZATION AND CONTENT**

Section 7 Programme organization

The programme is organized into modules as a problem based and project organized course of study consisting of eight obligatory modules representing a total of 110 ECTS points and two elective modules, each of 5 ECTS points. The 9th semester offers: *i*) an obligatory module in which the student has a choice between two strands, and *ii*) two elective modules. With regard to the elective modules, the student has a choice of either selecting the two elective modules described below, or substituting one or both of them with modules offered by other master's programmes, subject to approval by the study board. In all cases, the student must elect modules equivalent to 10 ECTS points.

Obligatory modules including elective modules, see subsection 5 and section 14

ICT, Learning and Collaboration	7th semester	10 ECTS points
Design Theories and Methods	7th semester	10 ECTS points
Sustainable ICT Development	7th semester	10 ECTS points
Knowledge and Formalization	8th semester	10 ECTS points
Human-Computer Interaction (HCI)	8th semester	10 ECTS points
ICT Systems: Use and Meaning	8th semester	10 ECTS points
ICT Systems in Practice	9th semester	20 ECTS points

Master's Thesis	10th semester	30 ECTS points
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Elective modules

Design Based Research Methodology	9th semester	5 ECTS points
ICT Ethics	9th semester	5 ECTS points

Subsection 2

The objective of the programme is to give students competence in creating sustainable ICT solutions based on a perspective informed by history, ethics, culture, and the philosophy of technology. In consequence, tuition is situated at a crossroads between the disciplinary areas of technology, design and organization, offering the student the opportunity to specialise in relation to certain sectors, organizations and enterprises that work with language, health, learning and education, government services, etc.

The central knowledge areas of the programme are:

- ICT, learning and collaboration
- design and system development
- knowledge and formalization
- human-computer interaction.

Subsection 3

The 7th semester of the programme centres on the theme ICT design and development. The semester comprises three modules: two course modules and a project module. The course modules cover two of the central knowledge areas of the programme, emphasising theoretical and methodological aspects of ICT, learning and collaboration, and design and system development within the application areas mentioned in subsection 2. The student prepares a project whose topic is defined by the theme.

Subsection 4

The 8th semester of the programme centres on the theme ICT systems and their use and meaning. The semester comprises three modules: two course modules and a project module. The course modules cover two central knowledge areas of the programme, emphasising theoretical and methodological aspects of knowledge and formalization in relation to ICT and human-computer interaction within the application areas mentioned in section 7, subsection 2. The student prepares a project whose topic is defined by the theme.

Subsection 5

The 9th semester of the programme centres on the theme ICT systems in practice. The semester comprises an obligatory module and elective modules. In the obligatory module there is a choice between two alternatives: Either a project orientated placement in an enterprise working in a national or international context (elective A), or a project orientated research placement (elective B). A project concerning the placement, or a project in connection with the research placement, is prepared. Process descriptions and reflections on own learning are reported in the student's personal portfolio.

The elective modules offer the student the opportunity to emphasise particular aspects of the programme. Electives are selected among the modules offered by this programme (see subsection 1) or by other master's programmes. The choice of electives offered by other master's programmes is subject to advance approval by the study board.

Subsection 6

The 10th semester of the programme centres on the preparation of a master's thesis. The thesis may take the form of either a theoretical and analytical project, or a design and implementation project.

Section 8 Module 1: ICT, Learning and Collaboration

The module is offered in the 7th semester of the programme and has an extent of 10 ECTS points. Coursework is offered within socio-cultural learning theory and organizational change, learning design and technology workshops, emphasising the work domains mentioned in section 7, subsection 2.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to analyse, assess and critically appraise:

- socio-cultural learning theories
- theories on organizational change, in particular within the work domains mentioned in section 7, subsection 2.
- ict tools, e.g. by proposing solutions for the support of learning.

Practical competences: At the conclusion of the module the student must be able to:

- apply theories and methods concerning socio-cultural learning theory
- design ICT-mediated learning environments
- apply methods for organizational anchoring
- acquire and adapt ICT tools within the work domains mentioned in section 7, subsection 2.

Section 9 Module 2: Design Theory and Methodology

The module is offered in the 7th semester of the programme and has an extent of 10 ECTS points. Coursework is offered in the theory and methodology of design, and in innovation design and interaction design with a view to sustainable ICT. Coursework is furthermore offered in ethnographic and change orientated methods.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to analyse, assess and critically appraise:

- design theory and methodology with an emphasis on innovation design and interaction design
- ethnographic and change orientated methods and their validation
- socio-technical design.

Practical competences: At the conclusion of the module the student must be able to:

- work with the design of sustainable ICT on a theoretical and methodical basis
- initiate, support, participate in, and evaluate innovative design processes and interaction design
- apply ethnographic and change orientated methods in relation to design
- critically and independently apply the theories studied in the module.

Section 10 Module 3: Sustainable ICT Development

The module is offered in the 7th semester of the programme and has an extent of 10 ECTS points. The module is organized as problem orientated project work. It is a critical requirement that the project work be problem orientated as the student will thereby integrate his/her theoretical and methodological studies into a basis for the development of concepts for sustainable ICT development within the work domains mentioned in section 7, subsection 2.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able:

- within the work domains mentioned in section 7, subsection 2, to analyse, assess and critically appraise theories on and methods for the design and development of sustainable ICT based on learning theory
- to analyse, assess and critically appraise the basis of the abovementioned theories and methods in the theory of science.

Practical competences: At the conclusion of the module the student must be able to:

- work methodically with the analysis, design, implementation and integration of ICT systems on the basis of learning theory and practice
- manage projects, collaborate professionally in a design team and interact with diverse groups of actors
- develop prototypes.

Section 11 Module 4: Knowledge and Formalization

The module is offered in the 8th semester of the programme and has an extent of 10 ECTS points.

Coursework introducing the field of knowledge representation, including formal logics and artificial intelligence, is offered.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must have gained insight into, and be able to assess and discuss:

- theories on knowledge representation, narratology, rhetoric and ethics
- theories on formal ontology and categorization
- theory and fundamental discussions concerning artificial intelligence
- logical formalization methods.

Practical competences: At the conclusion of the module the student must be able to:

- execute narrative, rhetorical and ethical analyses of ICT systems
- describe a knowledge field with a view to the construction of a formal ontology
- organize a knowledge representation with a view to subsequent implementation.

Section 12 Module 5: Human-Computer Interaction (HCI)

The module is offered in the 8th semester of the programme and has an extent of 10 ECTS points.

Coursework is offered in the theory and method of human-computer interaction. Work is dedicated to normative as well as empirical and user centred methods for the evaluation and design of HCI, with emphasis on the work domains mentioned in section 7, subsection 2.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to analyse, assess and critically appraise:

- interaction paradigms
- theories on technological mediation (context and workplace practice)
- theories on commissioning
- methods for the evaluation/design of HCI.

Practical competences: At the conclusion of the module the student must be able to:

- execute usability/utility studies
- organize and manage commissioning procedures
- execute socio-technical analyses in relation to the evaluation/design of HCI.

Section 13 Module 6: ICT Systems: Use and Meaning

The module is offered in the 8th semester of the programme and has an extent of 10 ECTS points. The module is organized as project work focusing on theories and methods in relation to the analysis of ICT development projects and ICT use within the work domains mentioned in section 7, subsection 2.

Objectives

Intellectual and professional competences: At the conclusion of the module, the student must, within the work domains mentioned in section 7, subsection 2, be able:

- independently, systematically and critically to formulate and analyse disciplinary problems through the application of scientific theories and methods in relation to the use of ICT
- independently, systematically and critically to analyse, assess and adapt scientific theories and professional methods in relation to the development and use of ICT.

Practical competences: At the conclusion of the module the student must be able to:

- examine ICT systems with a view to formalization, structuring and categorization
- apply case based methods and socio-technical analyses
- collaborate with actor groups and communicate analyses and results on the basis of dialogue.

Section 14 Module 7: ICT Systems in Practice

The student chooses either Field Studies of ICT Systems in Practice (elective A, see below), or Theoretical Studies of ICT Systems in Practice (elective B, see below).

Field Studies of ICT Systems in Practice (elective A)

The module is offered in the 9th semester of the programme and has an extent of 20 ECTS. The module is organized as a project orientated placement in an enterprise or organization working with ICT projects in a national or an international context. The student is offered the opportunity to participate independently in a project focusing on one or more of the dimensions of design, implementation, and analysis. Based on the project work, the student prepares a project report with reflections on the theories and methods of the discipline and the specific problems stemming from the project's execution in an enterprise or organization.

The student is attached to a project supervisor at Human Centred Informatics and a traineeship coordinator from the enterprise or organization in question.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to:

- critically appraise the theories and methods of the programme in relation to the encounter with a specific corporate culture and practice
- analyse and critically assess design, implementation and analysis in relation to the needs of an external collaborator.

Practical competences: At the conclusion of the module the student must be able to:

- plan, organize and execute design and/or implementation and/or analysis in collaboration with an external partner
- discuss how design, implementation and analysis may be organized in interplay with and

consideration of various target groups and contexts.

Theoretical Studies of ICT Systems in Practice (elective B)

The module is offered in the 9th semester of the programme and has an extent of 20 ECTS. It is organized as project work in connection with one of the programme's research environments. The project work must concern ICT projects in the context of an enterprise or research. Based on a case concerning one or more of the dimensions of design, implementation and analysis of ICT within a particular work domain (see section 7, subsection 2), the student must work with the theories and methods of the discipline. Based on this work, the student prepares a project report with reflections on the theories and methods of the discipline and the specific problems related to the application area, see section 7, subsection 2.

A project supervisor is available to the student.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to:

- critically appraise the theories and methods of the programme in relation to design, implementation and analysis of ICT systems in an organizational context
- discuss the organization of ICT systems in interplay with and consideration of various target groups and contexts.

Practical competences: At the conclusion of the module the student must be able to:

- delimit a comprehensive survey assignment. This includes the choice or elimination of relevant theories, sources and empirical data
- execute a comprehensive survey assignment
- work with complicated and comprehensive theoretical and analytical problems within the disciplinary area.

Section 15 Module 8: Design Based Research Methodology (elective module)

Design Based Research Methodology is an elective module of 5 ECTS points offered in the 9th semester of the programme, see section 7, subsection 1. The module focuses on user-driven innovation, action research, participatory design and the theory of science of the discipline. The student is offered the opportunity to develop a research design.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must be able to:

- critically appraise design based research methodology and discuss the method in relation to the problems of the discipline and its theories and methods.

Practical competences: At the conclusion of the module the student must be able to:

- plan, organize and implement a research design on the basis of design based research methodology, and document knowledge of various techniques for data sampling and analysis, including the application of ICT tools relevant for the purpose.

Section 16 Module 9: ICT Ethics (elective module)

ICT Ethics is an elective module of 5 ECTS points offered in the 9th semester of the programme; see section 7, subsection 1. Drawing on theories concerning philosophical ethics and specific experiences with

ethical challenges in relation to ICT in practice, the module focuses on ethical problems in relation to the development and application of ICT.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must have gained insight into:

- relevant parts of philosophical ethics (including ethical theories)
- ethical argumentation
- central themes within ICT ethics, including value based design, surveillance and socio-technical communities.

Practical competences: At the conclusion of the module the student must be able to:

- execute an ethical analysis of problems in relation to the development of ICT systems
- execute an ethical analysis of problems in relation to the specific use of ICT systems
- organize courses in ICT-related ethical problems for users and developers.

Section 17 Module 10: The Master's Thesis

The master's thesis module is offered in the 10th semester of the programme and has an extent of 30 ECTS points. A master's thesis on a topic within the framework of the programme is prepared. The thesis may be conducted as either a theoretical and analytical project, or a design and implementation project. The problem treated by the thesis is motivated, analysed, conceptualised and evaluated in relation to the chosen theories and methods.

The topic of the master's thesis is approved by the study board. The topic is presented to the board in the form of a synopsis giving a short preliminary problem statement, an argumentation for the relevance of the topic and the theoretical and methodological basis of the thesis, an indication of the proposed overall structure and organization, a preliminary bibliography, and time schedule, including a deadline for the submission of the thesis.

Objectives

Intellectual and professional competences: At the conclusion of the module the student must command:

- the theory of science of the disciplinary area
- the theories and methods of the discipline and their application in relation to a delimited problem.

Practical competences: At the conclusion of the module the student must be able:

- independently and systematically to create an overview of existing knowledge in relation to the problem treated by the thesis
- independently and systematically to select, expound and argue for the chosen approach in relation to the problem treated by the thesis as regards its theory of science and its theories and methods
- to analyse and discuss development criteria on both user level and organizational level
- to structure and communicate knowledge to an academic audience within the disciplinary area of the programme.

PART 4 **EXAMINATION REGULATIONS**

Section 18 General regulations

In the assessment of each examination either a grade according to the seven-point grading scale or the assessment Pass/Fail is given.

Subsection 2

Examinations are either internal or external. Unless otherwise stated, examinations are assessed by the supervisor/teacher ('eksaminator') and an internal or external examiner ('intern eller ekstern censor').

Subsection 3

All examinations are individual and can be conducted in English. Projects, theme studies ('emnestudier'), etc., may be prepared in collaboration by groups of up to five students. Master's theses may be prepared in collaboration by groups of up to three students. In the examination of projects, theme studies, master's theses, etc., one of the following three examination formats applies:

- A) An **oral** examination based on the written work, whether this is prepared individually or in collaboration with others. In the latter case, it may not be indicated who is responsible for the individual sections of the work. The student is examined on the basis of the written work in its entirety. A grade is given for the oral performance; the written work is thus only indirectly assessed.
- B) A **combined written and oral** examination based on the written work, whether this is individual work or the result of collaboration with others. In the latter case, it must be indicated for each of the individual sections who is responsible for the section concerned. The remaining sections are considered the shared responsibility of the group. The student is examined on the basis of the written work in its entirety. An overall grade is given for the oral and the written performance, the two elements being weighted equally.
- C) A **written** examination. Where the written work is prepared in collaboration with others, it must be indicated who is responsible for the individual sections of the work. A grade is given for the written performance, i.e. the section(s) of the written work for which the student is responsible.

Examination format B applies for examinations in the master's thesis.

Subsection 4

Where the extent of written work is regulated, one page equals 2400 characters, spacing included. The stipulated number of pages includes only the written account proper as the title page, preface, table of contents, bibliography, summary and appendices, are not counted. In counting the number of pages, notes, but not visual illustrations, are included. The number of pages is stated either on the front page or in a preface.

Subsection 5

The amount of time stated for oral examinations includes the examiners' discussion of the performance and the communication of the result.

Subsection 6

The assessment of all written work, regardless of the language in which it is written, includes an assessment of the student's spelling and writing skills. The assessment of the language performance is based on orthographic accuracy and the degree to which the norms of formal, academic written language are observed, and the demonstrated stylistic skills. The evaluation of the language performance should always form a constituent part of the overall assessment. However, no examination can be assessed as passed solely on the basis of a good language performance; likewise, an examination cannot normally be assessed as failed solely on the basis of a poor language performance.

Subsection 7

Registration for examination in the master's thesis (examination 10) is conditioned on the passing of all examinations described above, including examinations in optional courses to the extent stipulated.

Subsection 8

The student must complete his/her study programme not more than three years after commencement. Leave periods are not counted.

Subsection 9

The programme elements on which the individual examinations are based count as fractions of one full-time equivalent (FTE), one year of full-time study being equivalent to 60 ECTS points.

Subsection 10

Completion of the programme requires that all examinations that are assessed according to the seven-point grading scale have been passed with a grade point average not lower than 02. A weighted average of the grades obtained in examinations assessed according to the seven-point scale is calculated on the basis of each examination's weight in ECTS points. This is done by multiplying each of the relevant grades by the number of ECTS points allotted to the examination, the sum of which calculation is divided by the sum of ECTS points allotted to examinations contributing to the average.

Examinations assessed as either passed or failed do not enter into the above calculation. The average grade, rounded to one decimal place, is stated in the examination certificate.

Section 19 Examinations

Each module is concluded by an examination that tests the student's abilities within the competence goals defined for the relevant module. Excepting students who have chosen to substitute one or both of the elective modules with modules offered by other master's programmes (see section 7, subsection 1), in which case examination 8, respectively examinations 8 and 9, is/are substituted with the examination(s) relevant for the chose module(s), the programme consists of the following examinations:

The following examinations are conducted at the end of the 7th semester:

- 1) An internal oral examination in: ICT, Learning and Collaboration (**Ikt, læring og samarbejde**). The examination is based on a design (or prototype) of a mediated learning environment prepared by one or more student(s). Examination format A. Assessment: Pass/Fail. Extent: 10 ECTS points. The examination may be replaced by satisfactory active participation in the course offered in the area. The study board's definition of the said participation is communicated before commencement of the course.

In relation to the competence goals stipulated in section 8, the examination demonstrates that the student is able:

- through the application of scientific methods, independently, systematically and critically to analyse and assess scientific problems in relation to ICT, learning and organizational change
- to apply theories and methods for critical reflection on prototypical designs of ICT-mediated learning environments
- within the work domains mentioned in section 7, subsection 2, critically and operationally to appraise the ICT tools that form part of the prototypical design.

- 2) An internal oral examination in: **Design Theories and Methods (Designteori og -metode)**. The

examination is based on a poster concerning the design of sustainable ICT prepared by one or more student(s). Examination format: A. Duration of examination: 30 minutes. Assessment: Pass/fail. Extent: 10 ECTS points. The examination may be replaced by satisfactory active participation in the offered course. The study board's definition of the said participation is communicated before commencement of the course.

In relation to the competence goals stipulated in section 9, the examination demonstrates that the student is able to:

- analyse and assess theories and methods within the subject area
- manage innovative design processes
- work with ethnographic and change orientated methods in relation to design.

- 3) An internal, combined written and oral examination in: **Sustainable ICT Development (Bæredygtig ict-udvikling)**. The examination is based on a project report prepared by one or more student(s). The project report may not exceed 15 pages per student in the project group; individually prepared reports may not exceed 20 pages. Examination format: B. Duration of examination: 40 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 10 ECTS points.

In relation to the competence goals stipulated in section 10, the examination demonstrates that the student is able:

- independently, systematically and critically to formulate and analyse scientific problems through the application of scientific method
- to adopt a broad perspective on the subject area while demonstrating a profound knowledge of the project's problem field
- to analyse ICT systems through the application of the methods of the subject area.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

The following examinations are conducted at the end of the 8th semester:

- 4) An internal written examination in: **Knowledge and Formalization (Viden og formalisering)**. The examination takes the form of a free written assignment within the subject area. An advance agreement on the topic of the assignment is reached between the student and the teacher/supervisor ('eksaminator'). The answer may not exceed 15 pages and is prepared individually. Assessment: Pass/Fail. Examination format: C. The answer is assessed by the teacher/supervisor ('eksaminator'); answers that are deemed to fall below the pass requirements are assessed as well by a second examiner ('censor'). Extent: 10 ECTS points. The examination may be replaced by satisfactory active participation in the offered course. The study board's definition of the said participation is communicated before commencement of the course.

In relation to the competence goals stipulated in section 11, the examination demonstrates that the student is able to:

- analyse and discuss theoretical and practical problems in relation to knowledge representation and formalization.

- 5) An internal oral examination in: **Human-Computer Interaction (Menneske-maskine-interaktion)**. The examination is based in a study of a problem, etc., within the subject area, prepared by one or more student(s). The student(s) determine(s) the study's form and means of communication; for written work the number of pages may not exceed 10 pages per student in a group, for individual work 15 pages. Examination format: A. Assessment: Pass/Fail. Extent: 10 ECTS points. The examination may be replaced by satisfactory active participation in the offered course. The study board's definition of the said participation is communicated before commencement of the course.

In relation to the competence goals stipulated in section 12, the examination demonstrates that the student is able to:

- apply professional methods
- perform a critical analysis and discussion of human-computer interaction in ICT systems in organizations.

- 6) An external, combined written and oral examination in: **ICT Systems: Use and Meaning (Ikt-systemer: Brug og betydning)**. The examination is based on a project report prepared by one or more student(s). The project report may not exceed 15 pages per student in the project group; individually prepared reports may not exceed 20 pages. Examination format: B. Duration of examination: 40 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 10 ECTS points.

In relation to the competence goals stipulated in section 13, the examination demonstrates that the student is able:

- independently, systematically and critically to formulate, analyse and treat disciplinary problems through the application of scientific methods
- to adopt a broad perspective on the subject area while demonstrating an exhaustive knowledge of the project's problem field
- to collaborate professionally in analysis teams and interact with diverse groups of actors.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

The following examinations are conducted at the end of the 9th semester, examination 7 being obligatory, while examination 8 and examination 9 test the elective modules (see section 19, introductory remarks):

- 7) An external, combined written and oral examination in: **ICT in Practice (Ikt-systemer i praksis)** The examination is conducted in continuation of the student's completion of either elective A) Field Studies of ICT Systems, or elective B) Theoretical Studies of ICT Systems in Practice, see section 14. The examination is based on a project report prepared by one or more student(s). The project report may not exceed 20 pages per student in the project group; individually prepared reports may not exceed 25 pages. Examination format: B. Duration of examination: 40 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 20 ECTS points.

In relation to the competence goals stipulated in section 14, the examination demonstrates that the student is able to:

- critically appraise the theories and methods of the programme in relation to one or more of the following dimensions pertaining to ICT systems in an organizational context: design, implementation and analysis
- discuss how ICT systems may be organized in consideration of and interplay with diverse target groups and contexts.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

- 8) An internal oral examination in: **Design Based Research Methodology (Designbaseret forskningsmetode)**. The examination consists in a demonstration of and dialogue on a portfolio prepared by the student. Examination format: A. Duration of examination: 20 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 5 ECTS points.

In relation to the competence goals stipulated in section 15, the examination must document that the student:

- possesses a thorough and comprehensive understanding of design based research methodology
- is able independently, systematically and critically to formulate and organize a research design on the basis of design based methodology
- commands techniques for the sampling and analysis of data, including relevant ICT tools.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

- 9) An internal oral examination in: **ICT Ethics (Ikt-etik)**. The examination consists in a demonstration of and dialogue on a portfolio prepared by the student. Examination format: A. Duration of examination: 20 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 5 ECTS points.

In relation to the competence goals stipulated in section 16, the examination demonstrates that the student:

- possesses a thorough and comprehensive understanding of parts of philosophical ethics (including ethical theories)
- is able independently, systematically and critically to analyse and assess ethical problems in relation to ICT
- is able to execute an ethical analysis of problems in relation to the development and use of ICT systems.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

The following examination is conducted at the end of the 10th semester:

- 10) An external, combined written and oral examination in: **The Master's Thesis (Kandidatspecialet)**. The examination is based on a master's thesis which includes a specific design/concept prepared by one or more student(s). The thesis must be not less than 35 pages and not more than 70 pages per student in the project group, not more than 80 pages for individually prepared reports. The master's thesis may be prepared in English, and must include a summary of not less than 1 page and not more than 2 pages written in a language relevant for the programme, subject to the study board's approval. The summary is taken into account in the overall assessment of the master's thesis. Examination format: B. Duration of examination: 45 minutes. Assessment: A grade according to the seven-point grading scale. Extent: 30 ECTS points.

In relation to the competence goals stipulated in section 17, the examination demonstrates that the student:

- has gained insight into the implications of research work (or research ethics)
- is able independently, systematically and critically to formulate and analyse scientific problems through the application of scientific theories and methods
- is able to reflect on and evaluate design, and to organize and integrate ICT with emphasis on the implications for learning and knowledge processes.

In the assessment of the examination performance, the grade 12 is given only with due consideration of the student's fulfilment of the above requirements in ways that are satisfactory, independent and persuasive.

Section 20 Overview of examinations (120 ECTS points)

No.	Course	Internal assessment		External assessment	
		Pass/Fail	Graded	Pass/Fail	Graded
1	ICT, Learning and Collaboration	10 ECTS			
2	Design Theories and Methods	10 ECTS			
3	Sustainable ICT Development		10 ECTS		
4	Knowledge and Formalization	10 ECTS			
5	Human-Computer Interaction	10 ECTS			
6	ICT Systems: Use and Meaning				10 ECTS
7	ICT Systems in Practice				20 ECTS
8	Design Based Research Methodology		5 ECTS		
9	ICT Ethics		5 ECTS		
10	Master's Thesis				30 ECTS

Section 21 Re-examination

For questions concerning re-examinations outside the ordinary examination periods, reference is made to the examination regulations in force at the time concerned.

PART 5 **OTHER REGULATIONS**

Section 22 Exemption

When this is motivated in unusual conditions, the Study Board for Human Centred Informatics may dispense from those rules in the curriculum that are laid down by the University alone.

Section 23 Further information

The study board publishes and maintains on its webpage more detailed information concerning the programme, including information on examinations.

Section 24 Entry into force

The curriculum is submitted by the Study Board for Human Centred Informatics and approved by the Dean. The curriculum enters into force as of 1 September 2008 and applies to all students commencing their master's programme on that or a later date.

For students following earlier curricula, the master's programme must be completed not later than 31 August 2009.