

FACULTY OF HUMANITIES

UNIVERSITY OF COPENHAGEN



**Curriculum for
the main subject at Master's level in
IT and Cognition,
The 2015 curriculum**

Adjusted 2017_2 and 2018

**Department of Nordic Research
Faculty of Humanities
University of Copenhagen**

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Part 1. Authority, affiliation, prescribed period of study and structure, and title

1. Authority

The 2015 curriculum for the main subject at Master's level in IT and Cognition (2015-studieordningen for det centrale fag på kandidatniveau i IT og kognition) has been drawn up under the authority endowed by section 30 of Ministerial Order no. 1520 of 16 December 2013 on Bachelor's and Master's programmes at universities (the Study Programme Order).

2. Affiliation

The Master's programme with main subject in IT and Cognition falls under the auspices of the Study Board for Nordic Research and the corps of external examiners for Linguistics, Indo-European Linguistics and IT and Cognition.

3. Prescribed period of study and structure

The basic subject at master's level in IT and Cognition is prescribed to 120 ECTS.

4. Title

Graduates from the Master's programme with main subject in IT and Cognition are entitled to use the title Master of Science (MSc) in Information Technology (IT and Cognition). The title in Danish is cand.it i it og kognition.

Part 2. Admission requirements

5. Admission requirements

Bachelor's programmes granting direct admission are published on www.studies.ku.dk/masters/.

(2) The Faculty may admit other applicants than the ones stipulated in (1). Admission is granted if the applicant is assessed by the Study Board to have educational qualifications equivalent to a Bachelor's programme granting direct admission, and the Faculty assesses that the applicant is able to complete the programme. For further details, see www.studies.ku.dk/masters/.

(3) Students must have passed what corresponds to English at level B in the Danish upper secondary school before commencing their studies. In order to ensure that all students have the necessary academic command of English to complete the programme, applicants need to submit proof of English language proficiency. Non-native speakers of English must pass the TOEFL with a score of 550 (on a paper-based test) / 80 (Internet-based test) or the University of Cambridge IELTS with a score of 6.0, or provide equivalent documentation, before commencing their studies. Students who have passed English at level B in the Danish upper-secondary school are exempt from this requirement. The Faculty of Humanities Institution Code for the TOEFL is 3312.

(4) The Faculty may demand that admission to a Master's programme requires participation in and passing of a supplementary course of up to 15 ECTS.

(5) The supplementary course must be passed either before the beginning of the semester or at the latest at the first exam period after the student's commencing of study.

(6) Each year, the Study Board decides the admission capacity of the Master's programme in IT and Cognition. The admission capacity is published yearly at least 1 year before the deadline for applying on www.studies.ku.dk/masters/.

(7) In the event that the number of qualified applicants exceeds the admission capacity, applicants are prioritised according to criteria published on www.studies.ku.dk/masters/.

Part 3. Technical requirements pertaining to study

6. Reading texts in (a) foreign language(s)

English language proficiency is required.

7. Definition of a standard page

A standard page as applied to syllabus and the submission of take-home assignments, including the Master's thesis, corresponds to 2,400 keystrokes, including spaces. When calculating the extent of take-home assignments, notes are included, but not cover page, table of contents, bibliography and appendices.

8. Writing and spelling skills

When assessing take-home assignments, including the Master's thesis, both in English and in other languages, the student's writing and spelling skills (as documented in the work submitted) must be included in the overall assessment of the piece of work concerned, although the academic content is weighted most heavily. If special emphasis is placed on writing and spelling skills, this will be stipulated under the individual subject element in section 13.

9. Syllabus

Information about current syllabus provisions for the individual subject elements is published on the study pages in KUNet under: Study Programme => Curricula and Rules.

Part 4. Academic profile

10. Programme objectives

The purpose of the main subject at Master's level in IT and Cognition is to enhance the student's academic knowledge and skills, and to further develop the theoretical and methodological competences gained during the Bachelor's programme. The student gains greater independence and academic immersion through the advanced elements of the subject area's disciplines and methods, including training in research work and methodology. The student is given the opportunity to develop and focus his or her competences with a view to future work in specialist functions, including admission to a PhD programme.

11. Competence profile for the Master's graduate

Competence description

Graduates with basic subject at master's level in IT and Cognition are expected to be able to contribute to developing advanced cognitive technologies, managing large volumes of textual and visual data, and identifying new industrial applications of cognitive technologies. They are also expected to be qualified for acceptance in PhD programmes where they can contribute to advanced research in language and image processing.

The programme consists of two branches, in language processing and image processing, as well as a line of general courses in cognitive science with a focus on computational modelling. Students will also follow an introductory course in advanced scientific programming and an introductory course in data science. Selective courses will be offered in advanced language processing, advanced image processing, advanced machine learning, search and optimization, human computer interaction, or related fields.

Competence objectives

A graduate in IT and Cognition has the following specific competences:

Knowledge and understanding of

- recent developments in cognitive science
- recent developments in machine learning and data mining
- major challenges in user interface design and human computer interaction
- the usefulness of cognitive models for information and communication technology (ICT) industries.

Skills in

- modelling cognitive processes using advanced computational methods including machine learning
- recognising, selecting and applying data mining methods for exploring and analysing large volumes of data, including texts and images
- applying important methods in text and image processing
- programming for scientific experiments and functional prototypes of cognitive systems
- evaluating and comparing models of cognitive processes on large amounts of data
- visualising data and evaluations of methods.

Competences in

- working in a cross-disciplinary manner with challenging problems at the frontiers of cognitive technology
- analysing practical information management problems and understanding the potential of known methods in machine learning and data mining
- quickly familiarising oneself with, describing and analysing important methods in text and image processing
- applying and disseminating knowledge about cognitive technologies
- dealing with the complexity of human language, vision and cognition
- designing innovative and intelligent ICT using knowledge of language and human cognition
- identifying new applications of cognitive models of interest to research or industry
- carrying out major projects that meet industrial and research standards in an independent and creative manner.

Part 5. The main subject at Master's level in IT and Cognition

12. The main subject in IT and Cognition

The programme's structured course includes a mobility window of 30 ECTS which after application can be used by the student for studying abroad etc.

(2) In module 3 the student has to choose between the following subject elements:

Specialization 2 and Specialization 3 or Academic Internship, and Free Topic, or Specialization 4

(3) The courses for the Master's programme with main subject in IT and Cognition are depicted in the table below. Alternatives to the structured course are in italics.

Semester	Module (part of the programme)	Subject element (subject type)	Exam provisions
1.	1: IT and Cognition 1 (the main subject) 30 ECTS	Cognitive Science 1 (compulsory and constituent) 7.5 ECTS HIOK03551E	Oral exam, set subject External The 7-point grading scale
		Scientific Programming (compulsory and constituent) 7.5 ECTS HIOK03561E	Continuous assessment. Active student participation Internal with one examiner Pass/Fail
		Vision and Image Processing (compulsory and constituent) 7.5 ECTS NDAK12002E	Continuous assessment Internal with multiple examiners Pass/Fail
		Language Processing 1 (compulsory and constituent) 7.5 ECTS HIOK03571E	Continuous assessment Active student participation Internal with one examiner Pass/Fail
2.	2: IT and Cognition 2 (the basic subject) 30 ECTS	Cognitive Science 2 (compulsory and constituent) 7.5 ECTS HIOK03581E	Take-home assignment, optional subject External The 7-point grading scale
		Language Processing 2 (compulsory and constituent) 7.5 ECTS HIOK03591E	Take-home assignment, set subject Internal with one examiner The 7-point grading scale
		Specialization 1 (compulsory, elective and constituent) 7.5 ECTS HIOK03601E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
		Introduction til Data Science (compulsory and constituent) 7.5 ECTS NDAK16003E	Continuous assessment Internal with multiple examiners The 7-point grading scale
3.	3: Advanced IT and Cognition (the basic subject) 30 ECTS (Mobilitetsvindue)	Cognitive Science 3 (compulsory and constituent) 7.5 ECTS HIOK03611E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
		Specialization 2 (elective and constituent) 7.5 ECTS HIOK03621E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
		Specialization 3 (elective and constituent) 7.5 ECTS HIOK03631E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
		<i>Academic Internship (elective and constituent)</i> 15 ECTS HIOK03641E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale

Semester	Module (part of the programme)	Subject element (subject type)	Exam provisions
		Free Topic (elective and constituent) 7.5 ECTS HIOK03651E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
		<i>Specialization 4 (elective and constituent)</i> 7.5 ECTS HIOK03661E	Take-home assignment, optional subject Internal with one examiner The 7-point grading scale
4.	4: Master's Thesis (the main subject) 30 ECTS	Master's Thesis (compulsory and constituent) 30 ECTS HIOK03671E	Take-home assignment, optional subject and oral defence External The 7-point grading scale

13. The main subject's modules

Module 1: IT and Cognition 30 ECTS

Competence objectives for the module	<p>The module will give the student: Knowledge and understanding of</p> <ul style="list-style-type: none"> important concepts in cognitive science relating to human processing of language and images basic methods in machine learning and linear algebra. <p>Skills in</p> <ul style="list-style-type: none"> programming for scientific experiments modelling cognitive processes using machine learning linguistic analysis data visualisation processing language and images evaluating language and image processing systems. <p>Competences in</p> <ul style="list-style-type: none"> describing and analysing methods and experiments in text and image processing.
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Cognitive Science 1 (compulsory and constituent)

7.5 ECTS

Activity code: HIOK03551E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> explain key concepts, problems and theories in contemporary computational research in cognitive science present research literature in computational cognitive science in a clear and concise manner.
Types of instruction and work	Lectures.

Exam provisions	<p>Form of exam: Oral exam (presentation), set subject, no preparation. Make-up exam/re-exam: Oral exam, set subject, no preparation and examination on the syllabus. Assessment: External exam, the 7-point grading scale. Exam language(s): English. Group exam: The exam can only be taken individually. Extent: 30 minutes, including grading and feedback. The oral presentation may last up to 10 minutes, followed by 10 minutes of discussion. Extent of re-exam: 30 minutes, including grading and feedback. The oral presentation may last up to 10 minutes, followed by 15 minutes discussion and examination on the syllabus. Permitted exam aids: All.</p>
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Scientific Programming (compulsory and constituent)

7.5 ECTS

Activity code: HIOK03561E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • program with linear algebra • implement routine procedures relevant to data managing • create plots or related visualisations of data • implement simple learning algorithms or related algorithms of importance to cognitive technologies.
Types of instruction and work	Lectures and exercise classes.
Exam provisions	<p>Form of exam: Active student participation consisting of 3-5 assignments. Make-up exam/re-exam: Take-home assignment, set subject and submission of the assignments from the regular exam. Assessment: Internal exam with one examiner, Pass/Fail. Make-up exam/re-exam: Internal exam with one examiner, Pass/Fail. Exam language(s): English. Group exam: The exam can only be taken individually. Extent: Make-up exam/re-exam: The assignment should describe the attached code and be no longer than 10 standard pages. 10 days are given for completion of the assignment. The internal examiner provides a problem formulation at least 10 days before the assignment is due for submission. The assignments from the regular exam must also be submitted. Permitted exam aids: All.</p>

Vision and Image Processing (compulsory and constituent)

7.5 ECTS

Activity code: NDAK12002E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • describe common applications of image processing of importance to society • describe and apply feature extraction methods and modelling techniques in image processing • understand and analyse the main challenges in image processing today • implement and evaluate selected methods in image processing.
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Types of instruction and work	Lectures and exercise classes.
Exam provisions	<p>Form of exam: Continuous assessment Make-up exam/re-exam: Take-home assignment, set subject Assessment: Internal exam with multiple internal examiners, Pass/Fail Exam language(s): English Group exam: The exam can only be taken individually. Extent: Resubmission of assignments. Permitted exam aids: All.</p>
Special provisions	Continuous assessment based on 4-6 assignments throughout the course.

Language Processing 1 (compulsory and constituent)

7.5 ECTS

Activity code: HIOK03571E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • document knowledge of selected linguistic fields of relevance to language technology, e.g. morphology, syntax, semantics, discourse • understand the main challenges in natural language processing today and the methods applied • document knowledge of common language technology applications of importance to society • implement and evaluate selected methods in language processing.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Active student participation consisting of 3-5 assignments. Make-up exam/re-exam: Take-home assignment, set subject and resubmission of the assignments from the regular exam. Assessment: Internal exam with one examiner, Pass/Fail. Make-up exam/re-exam: Internal exam with one examiner, Pass/Fail. Exam language(s): English. Group exam: The exam can only be taken individually. Extent: Make-up exam/re-exam: The assignment should describe the attached code and be no longer than 10 standard pages. 10 days are given for completion of the assignment. The internal examiner provides a problem formulation at least 10 days before the assignment is due for submission. The assignments from the regular exam must also be resubmitted. Permitted exam aids: All.</p>

Module 2: IT and Cognition 2
30 ECTS

Competence objectives for the module	<p>The module will give the student: Knowledge and understanding of</p> <ul style="list-style-type: none"> • recent developments in machine learning and data mining • major developments in user interface design and human computer interaction • the usefulness of cognitive models for ICT industries. <p>Skills in</p> <ul style="list-style-type: none"> • using advanced computational methods including machine learning • recognising, selecting and applying data mining methods for exploring and analysing large volumes of data, including texts and images • evaluating and comparing models of cognitive processes on large amounts of data • visualising data and evaluations of methods. <p>Competences in</p> <ul style="list-style-type: none"> • applying and disseminating knowledge of human language, vision and cognition • analysing practical information management problems and understanding the potential of known methods in machine learning and data mining.
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Cognitive Science 2 (compulsory and constituent)

7.5 ECTS

Activity code: HIOK03581E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • analyse complex problems in computational cognitive science • evaluate data collections, scientific experiments and system architectures • understand and discuss frontier research in solving complex problems.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: External exam, the 7-point grading scale. Exam language(s): English Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: regular exam: 5-10 standard pages. Group exam: 8-13 standard pages (2 students), 10-15 standard pages (3 students). Re-exam: 13-15 standard pages. Permitted exam aids: All.</p>

Language Processing 2 (compulsory and constituent)

7.5 ECTS

Activity code: HIOK03591E

Academic objectives	The examinee is able to: <ul style="list-style-type: none"> • demonstrate theoretical insight into natural language processing by identifying problems and solutions in the context of practical applications • apply feature extraction methods and modelling techniques in natural language processing • deal with specific challenges arising from processing user-generated content • evaluate systems or system components.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, set subject.</p> <p>Make-up exam/re-exam: Same as above.</p> <p>Assessment: Internal exam with one examiner, the 7-point grading scale.</p> <p>Exam language(s): English.</p> <p>Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work.</p> <p>The re-exam can only be taken individually.</p> <p>Extent: <i>Regular exam:</i> 5-10 standard pages. Group exam; 8-13 standard pages (2 students), 10-15 standard pages (3 students). 10 days are given for completion of the assignment. Re-exam: 13-15 standard pages.</p> <p>Permitted exam aids: All.</p>

Specialization 1 (compulsory, elective and constituent)

7.5 ECTS

Activity code: HIOK03601E

Academic objectives	The examinee is able to: <ul style="list-style-type: none"> • document a specialization of relevance to cognitive technologies such as image or language processing by describing and analysing advanced topics within image and language processing or related cognitive technologies.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject.</p> <p>Make-up exam/re-exam: Same as above.</p> <p>Assessment: Internal exam with one examiner, the 7-point grading scale.</p> <p>Exam language(s): English.</p> <p>Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work.</p>

Introduction to Data Science (compulsory and constituent)
7.5 ECTS
Activity code: NDAK16003E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • document knowledge of advanced probabilistic data modelling and statistical machine learning for pattern recognition • demonstrate experience in implementing and empirically evaluating machine learning algorithms.
Types of instruction and work	Lectures and exercise classes.
Exam provisions	<p>Form of exam: Continuous assessment. Make-up exam/re-exam: Oral exam, set subject. Assessment: Internal exam with multiple examiners, the 7-point grading scale. Make-up exam/re-exam: Internal exam with multiple examiners, the 7-point grading scale. Exam language(s): English Extent make-up exam/re-exam: 20 minutes, no preparation time. Permitted exam aids: All.</p> <hr/> <p>Exam in case of non-approved active student participation Exam form: Oral exam, set subject. Make-up exam/re-exam: Same as above. Assessment: Internal with multiple examiners, the 7-point grading scale. Exam language: English. Group exam: The exam can only be taken individually Extent: 20 minutes, no preparation time. Permitted exam aids: All.</p>
Special provisions	Assessment of 5-7 homework assignments.

Module 3: Advanced IT and Cognition
30 ECTS

<p>Competence objectives for the module</p>	<p>The module will give the student: Knowledge and understanding of</p> <ul style="list-style-type: none"> • recent developments in cognitive science • recent developments in machine learning and data mining. <p>Skills in</p> <ul style="list-style-type: none"> • programming for scientific experiments and functional prototypes of cognitive systems • evaluating and comparing models of cognitive processes on large amounts of data. <p>Competences in</p> <ul style="list-style-type: none"> • working in a cross-disciplinary manner with challenging problems at the frontiers of cognitive technology, possibly in collaboration with research groups or companies • dealing with the complexity of human language, vision and cognition • designing innovative and intelligent cognitive technologies drawing on knowledge of human cognition.
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Cognitive Science 3 (compulsory and constituent)
7.5 ECTS
Activity code: HIOK03611E

<p>Academic objectives</p>	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • identify, analyse and discuss state-of-the-art problems and methods in computational cognitive science • evaluate complex system architecture • assess their relevance in relation to real-world applications • critically evaluate frontier research in cognitive technologies.
<p>Types of instruction and work</p>	<p>Lectures or series of seminars.</p>
<p>Exam provisions</p>	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: regular exam: 5-10 standard pages. Group exam: 8-13 standard pages (2 students), 10-15 standard pages (3 students). Re-exam: 13-15 standard pages. Permitted exam aids: All.</p>

Specialization 2 (elective and constituent)

7.5 ECTS

Activity code: HIOK03621E

Academic objectives	The examinee is able to: <ul style="list-style-type: none"> document a specialization of relevance to cognitive technologies such as image or language processing by describing and analysing advanced topics within image and language processing or related cognitive technologies
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English. Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: regular exam: 5-10 standard pages. Group exam: 8-13 standard pages (2 students), 10-15 standard pages (3 students). Re-exam: 13-15 standard pages. Permitted exam aids: All.</p>

Specialization 3 (elective and constituent)

7.5 ECTS

Activity code: HIOK03631E

Academic objectives	The examinee is able to: <ul style="list-style-type: none"> document a specialization of relevance to cognitive technologies such as image or language processing by describing and analysing advanced topics within image and language processing or related cognitive technologies.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English. Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: Regular exam: 5-10 standard pages. Group exam: 8-13 standard pages (2 students), 10-15 standard pages (3 students). Re-exam: 13-15 standard pages. Permitted exam aids: All.</p>

Academic Internship (elective and constituent)

15 ECTS

Activity code: HIOK03641E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • identify and formulate a relevant research or applied problem, in collaboration with a company or a research group, as well as a motivated hypothesis • identify new interesting research problems or new methods of interest to research or industry • develop a formal model for testing the main hypothesis • compare the model with relevant related work • implement and evaluate the model empirically • account for the model and the empirical results in a written report.
Types of instruction and work	<p>There is no teaching. The academic internship must correspond to at least 8 weeks full-time work.</p>
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English. Group exam: The exam can only be taken individually. Extent: 5-8 standard pages. Permitted exam aids: All. See also KUnet under Examination => Before the Exam => Materials Permitted During Exams.</p>
Special provisions	<p>The subject element is project-oriented and implies engagement at a workplace and submission of a written take-home assignment documenting the work done and its relation to the study programme. An internship attestation by the person in charge of the internship at the workplace must also be submitted. At the beginning of the project period, the examinee draws up a contract along with an entitled examiner and the contact person at the workplace in question. The contract must set out the objectives of the engagement at the workplace and mark out the scope and content of the specific tasks of the examinee.</p>

Free Topic (elective and constituent)

7.5 ECTS

Activity code: HIOK03651E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • identify and formulate a relevant research problem, possibly in collaboration with a company or a research group, as well as a motivated hypothesis • identify new interesting research problems or new methods of interest to research or industry • develop a formal model for testing the main hypothesis • compare the model with relevant related work • implement and evaluate the model empirically • account for the model and the empirical results in a written report.
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Types of instruction and work	Supervision.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English. Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: regular exam: 10-15 standard pages. Group exam: 13-18 standard pages (2 students), 15-20 standard pages (3 students). Re-exam: 15-20 standard pages. Permitted exam aids: All.</p>

Specialization 4 (elective and constituent)

7.5 ECTS

Activity code: HIOK03661E

Academic objectives	<p>The examinee is able to:</p> <ul style="list-style-type: none"> document a specialization of relevance to cognitive technologies such as image or language processing by describing and analysing advanced topics within image and language processing or related cognitive technologies display independence and creativity in identifying new applications of cognitive models of interest to research or industry or by designing novel cognitive technologies, drawing on knowledge of human cognition.
Types of instruction and work	Lectures or series of seminars.
Exam provisions	<p>Form of exam: Take-home assignment, optional subject. Make-up exam/re-exam: Same as above. Assessment: Internal exam with one examiner, the 7-point grading scale. Exam language(s): English. Group exam: The exam can be taken individually or as a group exam by 2-3 students but with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The re-exam can only be taken individually. Extent: Regular exam: 5-10 standard pages. Group exam: 8-13 standard pages (2 students), 10-15 standard pages (3 students). Re-exam: 13-15 standard pages. Permitted exam aids All.</p>

Module 4: Master's Thesis
30 ECTS

<p>Competence objectives for the module</p>	<p>The module will give the student: Knowledge and understanding of</p> <ul style="list-style-type: none"> • recent developments in cognitive technologies related to a particular application or methodology. <p>Skills in</p> <ul style="list-style-type: none"> • formulating research questions in a concise manner • managing and documenting scientific experiments • conducting thorough error analysis • presenting scientific work in a well-structured, clear, focused and pedagogic manner, both orally and in writing. <p>Competences in</p> <ul style="list-style-type: none"> • carrying out a major project in an independent and creative manner that meets industrial and research standards.
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Master's Thesis (compulsory and constituent)
30 ECTS
Activity code: HIOK03671E

<p>Academic objectives</p>	<p>The examinee is able to:</p> <ul style="list-style-type: none"> • define one or more problem areas in a way that is relevant to contemporary research or industry • relate to relevant research literature • evaluate hypotheses by methodologically sound empirical experiments, mathematical proofs or clear arguments and theoretical considerations • master the academic terminology relevant to the topic, as well as the use of notes, citations, references, punctuation, spelling conventions, tables of contents and bibliographies, in line with the subject's standard practice • master the subject's relevant theories, interpretations, schools, points of view, etc. • communicate the topic's issues in a well-structured, clear, focused and pedagogic manner appropriate to the target audience (students at master's thesis level without prior knowledge of the area covered) • communicate in a conceptually and linguistically consistent manner that ensures that the claims, theses, arguments and conclusions are consistent both with each other and in relation to the thesis's underlying assumptions • display independence, e.g. by contributing to conceptual or technical innovation, conceptual clarification, by solving a problem, or by proposing new arguments or critique of pre-existing arguments • provide an adequate and accurate summary of the thesis's content and results • present and discuss the thesis at the oral defense.
<p>Types of instruction and work</p>	<p>Supervision.</p>

<p>Exam provisions</p>	<p>Form of exam: Take-home assignment, optional subject and oral defence. Assessment: External exam, the 7-point grading scale. The written part weighs 80% and the oral part 20%. Exam language(s): Take-home assignment: English. Summary: English or Danish. Group exam: The take-home assignment can be taken individually or as a group exam (max. 2-3 students) with individual assessment. For group exam, each individual participant's contribution to the assignment must be readily identifiable, and the joint part must not exceed 50% of the total work. The subsequent compulsory oral exam is individual. Extent: Take-home assignment: 50-60 standard pages, excluding collated materials and other appendices. Group exam: 2 students: 90-100 standard pages. 3 students: 130-140 standard pages. Summary: ½-1 standard page, both individually and as a group exam. Oral defence: 45 minutes, including grading. The student starts with a presentation of 20 minutes, which is followed by approx. 20 minutes of discussion. Permitted exam aids: All.</p>
<p>Special provisions</p>	<p>The summary is included in the assessment.</p> <p>The student's spelling and writing skills are included in the overall assessment.</p> <p>The Head of Studies at the Department of Nordic Research approves the subject for the thesis and a plan of supervision, and sets a deadline for submission.</p>

Part 6. General exam rules and assessment criteria

14. General exam rules

The rules contained in the Ministerial Order on University Examinations and Grading apply to the exams for the main subject at Master's level.

(2) Rules about exams, including registration and withdrawal, are published on www.kunet.dk.

(3) The exam language is usually the same as the language of teaching. The exam language for the curriculum's individual subject elements are published in the course catalogue on www.kurser.ku.dk.

(4) Make-up exams and re-exams are held in accordance with the regulations laid down in the Examination Order.

(5) The Study Board may stipulate exact rules for special exam conditions for students who are able to document a need for them, for example because of reduced physical or mental functions.

15. Assessment criteria

Assessment takes the form of the 7-point grading scale or Pass/Fail. Exhaustive fulfilment with none or few immaterial deficiencies of the the academic objectives for the individual subject elements describe the grade 12 (twelve).

(2) An exam has been passed if the grade 02 (two) or "Pass" is awarded.

(3) All exams within the Master's programme's overall framework of 120 ECTS must be passed before a Master's degree is conferred.

Part 7. Study activity and completion of the programme

16. Study activity

Students who are more than 30 ECTS behind in the programme will be offered guidance.

(2) Enrolment may be terminated for students who do not meet the faculty requirements for study activity. Current study activity requirements are published on www.kunet.dk.

17. Completion of the programme

Students enrolled on 1 September must complete the programme, including elective/minor, within 3 years (32 months), except section (3). Students enrolled on 1 February must complete the programme within 3 years (34 months), except section (3).

(2) If the programme is extended due to an elective outside the humanities, the maximum duration of study is extended with one semester.

(3) Students enrolled between 1 September 2013 and 31 August 2016 must complete the programme within 2.5 years.

(4) Students who do not complete within the maximum duration of study may have their enrolment terminated (cf. Ministerial Order on Admission and Enrolment on Master's Programmes at Universities).

Part 8. Credits and transitional provisions

18. Credits

Students may apply to the Study Board to have subject elements passed in another programme at the same level approved instead of elements of the main subject at Master's level in IT and Cognition.

(2) If students wish to take subject elements forming part of other study programmes at the same level, they must seek preapproval from the Study Board.

(3) A Master's thesis that forms the basis for a title in one Master's programme cannot be credit transferred to a new title in another Master's programme.

(4) The student is obliged to inform about and apply for credit transfer for previously passed programme elements from unfinished programmes at the same level.

(5) Preapproval to take subject elements at other educational institutions can only be granted if the student at the time of applying for preapproval commits him- or herself to apply for credit transfer for the subject elements in question and send documentation when the subject elements are passed. The student also commits him- or herself to inform about changes to the preapproved credit transfer.

19. Transitional provisions

At the latest 1½ years after this curriculum comes into force (cf. Section 21), all previous curricula for the main subject at Master's level in IT and Cognition will no longer be valid and exams will no longer be held under them.

(2) Exams taken under previous curricula for the main subject at Master's level in IT and Cognition correspond to the 2015 curriculum as indicated below. Passed exams can be transferred to the 2015 curriculum, and the student finishes the programme in compliance with the rules herein.

(3) Passed exams taken under previous curricula for the main subject at Master's level in IT and Cognition are transferred to the 2015 curriculum as per the table below. If the student wishes to

credit transfer subject elements that are not included in this table, the student must contact the Study Board for an individual decision.

2013 curriculum	ECTS	2015 curriculum	ECTS
Cognitive Science I	7.5	Cognitive Science 1	7.5
Scientific Programming	7.5	Scientific Programming	7.5
Vision and Image Processing	7.5	Vision and Image Processing	7.5
Language Processing I	7.5	Language Processing 1	7.5
Cognitive Science II	7.5	Cognitive Science 2	7.5
Language Processing II	7.5	Language Processing 2	7.5
Specialization I	7.5	Specialization 1	7.5
Statistical Methods for Machine Learning	7.5	Introduction to Data Science	7.5
Cognitive Science III	7.5	Cognitive Science 3	7.5
Specialization II	7.5	Specialization 2	7.5
Specialization III	7.5	Specialization 3	7.5
Specialization IV	7.5	Specialization 4	7.5
Project	7.5	Free Topic	7.5
Specialization II Specialization III	7.5 7.5	Academic Internship	15
Master's Thesis	30	Master's Thesis	30

Part 9. Registration for courses and exams

20. Registration for courses and exams

The faculty ensures that the student is registered for exams corresponding to 30 ECTS each half year of study/60 ECTS each full year of study at the relevant level of study, regardless of whether the student needs to pass exams from previous years of study. Registration for courses and exams is based on the programme's structured course, cf. section 12, subsection 3. The faculty also ensures registration for re-exam in the same exam period or directly thereafter if the student does not pass the regular exam.

(2) If the number of applicants exceeds the capacity for a subject element, the faculty uses drawing of lots. The faculty is responsible for ensuring that no students are delayed in their course of study because of a rejected registration.

(3) Under special circumstances, the faculty may grant exemptions from (1).

(4) Registration for electives is binding.

(5) The student registers for the 3rd exam attempt, unless the subject element is a prerequisite for a following subject element. In this case, the faculty registers for the 3rd exam attempt.

Part 10. Commencement, exemption, and approval

21. Commencement

The 2015 curriculum for the main subject at Master's level in IT and Cognition comes into force on 1 September 2015 and applies to students who are enrolled in this programme on 1 September 2015 or later.

22. Exemption

Under special circumstances, the Study Board may grant exemptions from those rules contained in the curriculum that have been set by the board itself.

23. Approval

The curriculum has been approved by the Study Board for the the Nordic Research Department on April 6, 2016.

The curriculum has been approved by the Dean of the Faculty of Humanities on April 11, 2016.

Adjusted and approved by the Study Board for the the Nordic Research Department on August 18, 2016.

Approved by the Faculty of Humanities on January 6, 2017.

The curriculum has been adjusted by the Faculty of Humanities on January 12 2018.

The curriculum has been adjusted by the Faculty of Humanities on March 12 2018.