



AALBORG UNIVERSITET

# **CURRICULUM FOR THE MASTER OF INFORMATION AND COMMUNICATION TECHNOLOGIES, 2020**

MASTER  
COPENHAGEN

[Link to this studyline](#)

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## **§ 1: PREFACE**

Pursuant to consolidation Act 778 of August 7, 2019 on Universities (the University Act), the following is established. The programme also follows the Joint Programme Regulations and the Examination Policies and Procedures for Aalborg University.

## **§ 2: BASIS IN MINISTERIAL ORDERS**

The Professional Master's Degree programme is organised in accordance with the Ministry of Higher Education and Science's Order no. 19 of January 9, 2020 on Professional Master's Degree Programmes, Ministerial order no. 24 of 9. January 2020 (the Part-Time Order), and Ministerial Order no. 22 of January 9, 2020 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order).

## **§ 3: CAMPUS**

The programme is offered in Copenhagen.

## **§ 4: FACULTY AFFILIATION**

The Master programme falls under the The Technical Faculty of IT and Design, Aalborg University.

## **§ 5: STUDY BOARD AFFILIATION**

The Master programme falls under the Study Board of Electronics and IT.

## **§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS**

The Master programme is associated with the Nationwide engineering examiners/Electronics, IT and Energy (Electromagnetic direction).

## **§ 7: ADMISSION REQUIREMENTS**

Admission to the master programme in ICT (MICT) presupposes a relevant higher education at least at bachelor level and at least 2 years of relevant professional experience pursuant to the completion of a qualifying exam.

Relevant bachelor educations are:

- Bachelor of science (BSc) or Bachelor of Engineering ("diplomingeniør") degree within the fields of IT, Communication or electronics.
- Bachelor degree within the area of Computer Science or Software Technologies

or other relevant education within technical IT.

All applicants must prove that their English language qualifications is equivalent to level B (Danish level) in English.

## **§ 8: THE PROGRAMME TITLE IN DANISH AND ENGLISH**

The Master programme entitles students to the Danish title: Master i informations- og kommunikationsteknologier.  
English title: Master of Information and Communication Technologies

## **§ 9: PROGRAMME SPECIFICATIONS IN ECTS CREDITS**

The education is the equivalent of a one-year full-time study (60 ECTS) offered as: a) two years of part-time study or b) three years of part-time study. Individual modules of the programme can also be followed to the extent that the necessary prerequisites are met.

## **§ 10: RULES CONCERNING CREDIT TRANSFER (MERIT), INCLUDING THE POSSIBILITY FOR CHOICE OF MODULES THAT ARE PART OF ANOTHER PROGRAMME AT A UNIVERSITY IN DENMARK OR ABROAD**

The Study Board can approve that passed programme elements from other educational programmes at the same level replaces programme elements within this programme (credit transfer).

Furthermore, the Study Board can, upon application, approve that parts of this programme is completed at another university or a further education institution in Denmark or abroad (pre-approval of credit transfer).

The Study Board's decisions regarding credit transfer are based on an academic assessment.

## § 11: EXEMPTION

The Study Board's possibilities to grant exemption, including exemption to further examination attempts and special examination conditions, are stated in the Examination Policies and Procedures published at this website:

<https://www.studieservice.aau.dk/regler-vejledninger>

## § 12: RULES FOR EXAMINATIONS

The rules for examinations are stated in the Examination Policies and Procedures published at this website:

<https://www.studieservice.aau.dk/regler-vejledninger>

## § 13: RULES CONCERNING WRITTEN WORK

In the assessment of all written work, regardless of the language it is written in, weight is also given to the student's formulation and spelling ability, in addition to the academic content. Orthographic and grammatical correctness as well as stylistic proficiency are taken as a basis for the evaluation of language performance. Language performance must always be included as an independent dimension of the total evaluation. However, no examination can be assessed as 'Pass' on the basis of good language performance alone; similarly, an examination normally cannot be assessed as 'Fail' on the basis of poor language performance alone.

The Board of Studies can grant exemption from this in special cases (e.g., dyslexia or a native language other than Danish).

The Master's project must include an English summary. If the project is written in English, the summary can be in Danish. The summary is included in the evaluation of the project as a whole.

## § 14: REQUIREMENTS REGARDING THE READING OF TEXTS IN A FOREIGN LANGUAGE

It is assumed that the student can read academic texts and use reference works, etc., in English.

## § 15: COMPETENCE PROFILE ON THE DIPLOMA

The following competence profile will be given in the diploma:

A graduate of the Master programme has competencies acquired through the course of an educational programme based in the integration of research results and practical experiences.

The graduate of the Master programme can through scientifically grounded personal and professional competencies perform highly qualified functions in the labor market.

## § 16: COMPETENCE PROFILE OF THE PROGRAMME

### Knowledge:

- has knowledge on information and communication technologies (ICT) that is based on the highest level of international research
- has in-depth knowledge and understanding of issues within the areas: service development, ICT infrastructures, markets and business models
- can understand and, on a scientific basis, reflect on the technical, organizational and market drivers in the convergence of ICT as well as the interplay between technology, market and user issues
- can reflect on the knowledge, theory, methodologies and practice within the field of ICT, and identify scientific issues
- understands the importance of innovation, creativity and entrepreneurship for ICT solutions and services
- understands the relevance of the needs of the end users, their use of ICT, and the mechanisms that influence the user experience and the acceptance of new technologies
- has a holistic understanding of the environment of ICT services and solutions: Scenarios of use, target users, stakeholders, business aspects, etc.
- Depending on the track:
  - mICT-MII 1) : has understanding of the work processes and process optimisations in the companies

- mICT-MII: has understanding of cognitive psychology theories that are relevant for product and service design
- mICT-ISP 2) : has knowledge about future Internet both from a network and a service architecture perspective
- mICT-ISP: has knowledge about development tools for ICT and media services
- mICT-CIS 3): has an overall knowledge about the latest cyber security and cybercrime law including regulation on personal data and privacy
- MICT-CIS: has knowledge about latest cyber threats and possible tools to mitigate those threats.

**Skills:**

- excels in scientific methods, tools and general skills within the field of communication technologies and markets,
- can evaluate and select among relevant scientific theories, methods, tools and general skills and, on a scientific basis, advance new analyses and solutions within the subject areas
- can communicate research-based knowledge and discuss professional and scientific problems with both peers and non-specialists
- excels in scientific writing: Articles, reports, documentation, etc.
- can identify and select among relevant standards, technologies and methods for development of ICT solutions and services
- can assess and compare different technologies for optimal technology selection, strategic decisions and business development
- can assess the market, ethical and regulatory framework for application of the technologies.
- can develop innovative services, applications and solutions at a conceptual level, which are relevant in a user perspective.
- can assess the implications and business potential of new ICT solutions and services and develop viable business models
- depending on the track:
  - mICT-MII: are able to optimise the service and product development processes within the companies
  - mICT-ISP: can develop prototypes or demonstrators of viable ICT solutions and services, based on in-depth analysis of user requirements, technology and market issues and using state-of-the-art methods, technologies and tools
  - MICT-CIS: are able to assist technical designers in design and development of secure software solutions for enterprises keeping cyber security challenges and legal perspectives in mind.

**Competences:**

- can manage work and development situations that are complex, unpredictable and require new solutions
- can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- can independently take responsibility for own professional development and specialization
- has competencies in project work and problem based learning in a global/multicultural environment
- has competencies in business development in a holistic perspective, based on a thorough understanding of the interplay between technology, market and users in ICT and media
- can contribute creatively and innovatively to identify and propose new business opportunities and develop services/solutions, which can empower the users and assist them in solving their current and future tasks on a daily basis
- can mediate collaboration and exchange between development- and business-related functions in organizations

1) mICT-MII: Management of ICT Innovations

2) mICT-ISP: ICT Services and Platforms

3) mICT-CIS: ICT Cyber and Information Security

## § 17: STRUCTURE AND CONTENTS OF THE PROGRAMME

The programme is structured in modules and organized as a problem-based study. A module is a programme element or a group of programme elements, which aims to give students a set of professional skills within a fixed time frame specified in ECTS credits, and concluding with one or more examinations within specific exam periods. Examinations are defined in the curriculum.

The programme is based on a combination of academic, problem-oriented and interdisciplinary approaches and organized based on the following work and evaluation methods that combine skills and reflection:

- lectures
- classroom instruction
- project work
- workshops
- exercises (individually and in groups)
- teacher feedback
- self-study
- reflection
- portfolio work

Furthermore, in this programme advanced teaching and learning tools, including E-learning and video conferencing tools will be used intensively.

### § 18: OVERVIEW OF THE PROGRAMME

Within the mICT programme three tracks are offered:

- ICT Services and Platforms (mICT-ISP)
- Management of ICT Innovations (mICT-MII)
- ICT Cyber and Information Security (mICT-CIS)

All tracks have the interdisciplinary approach combining the above mentioned academic areas. The mICT-ISP track has a more technical focus and provides theories, tools and methods for development of ICT and media services while the mICT-MII track has a more managerial focus and includes the theories, methods and tools for understanding the business processes and service design. And mICT-CIS track focuses on cyber security and crime from a technological and law perspective.

An overview of the curriculum is depicted in Table 1.

Throughout the education 3 main academic areas are covered:

- Networks and services
- Design and users
- Market and business

These are depicted in the main rows of Table 1.

The education is provided in 3 trimesters, where a trimester in the part time (two years) version is equivalent to 8 months and in the part time (three years) version is equivalent to one year.

Each trimester has a topic, which is depicted in the main columns of Table 1.

The project work in the 3rd trimester of the education constitutes the final project work and has a workload of 15 ECTS points. The final thesis project will be carried out either individually or in groups. If the final project is done in groups the preferable size for a group is 2 and the maximum size is 3. Each student will be given an individual mark according to the 7-point scale.

Individual examinations will take place in all courses. The examinations will be either oral or written exams. The evaluation form is indicated in the course descriptions.

The 60 ECTS include:

- 25 ECTS courses
- 35 ECTS projects

25 ECTS will be evaluated with external examiner. This includes the project in the first trimester and the final thesis project.

In Table 1 it is indicated which courses belong to mICT-ISP, mICT-MII and mICT-CIS tracks. Also courses common for all tracks are indicated in the table. Furthermore in the 3rd trimester two elective courses are offered.

|                       | 1st trimester                                                                                                  |       |       | 2nd trimester                                                                                                               |       |       | 3rd trimester                           |       |          |
|-----------------------|----------------------------------------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------|-------|-------|-----------------------------------------|-------|----------|
|                       | Theme:<br>ISP: Services and platforms<br>MII: Organizations and Innovations<br>CIS: Enterprises Cyber Security |       |       | Theme:<br>ISP: Application development<br>MII: Design and Innovation<br>CIS: Privacy & Security frameworks in Organizations |       |       | Theme:<br>Master Project                |       |          |
|                       | Course Title                                                                                                   | EC TS | Track | Course title                                                                                                                | EC TS | Track | Course title                            | EC TS | Track    |
| Networks and services | Communication technologies and service architectures                                                           | 5     | ISP   | Development of ICT and media services                                                                                       | 5     | ISP   | Identity and access management          | 5     | Elective |
|                       |                                                                                                                |       |       | Cyber security and trust                                                                                                    | 5     | CIS   |                                         |       |          |
| Design & Users        |                                                                                                                |       |       | Interaction design                                                                                                          | 5     | All*  |                                         |       |          |
|                       |                                                                                                                |       |       | Cognitive Psychology                                                                                                        | 5     | MII   |                                         |       |          |
| Market and business   | Entrepreneurship, Innovation and Business Models                                                               | 5     | All*  |                                                                                                                             |       |       | Markets, regulation and standardization | 5     | Elective |
|                       | Technology Management and Business Processes                                                                   | 5     | MII   |                                                                                                                             |       |       |                                         |       |          |
|                       | Cybercrime and Information Security Law                                                                        | 5     | CIS   |                                                                                                                             |       |       |                                         |       |          |
| Project (ECTS)        |                                                                                                                | 10    |       |                                                                                                                             | 10    |       |                                         | 15    |          |

\*) These courses are common for all tracks

\*\*) Only one of the elective courses can be selected for the third trimester

|                                                         |             |       |                       |                      |                              |          |
|---------------------------------------------------------|-------------|-------|-----------------------|----------------------|------------------------------|----------|
| Offered as: 1-professional                              |             |       |                       |                      |                              |          |
| Study programme: ICT Service and Platforms (mICT-ISP)   |             |       |                       |                      |                              |          |
| Module name                                             | Course type | ECT S | Applied grading scale | Evaluation method    | Assessment method            | Language |
| 1 SEMESTER                                              |             |       |                       |                      |                              |          |
| <a href="#">Services and Platforms</a><br>(ESNMICTM1P4) | Project     | 10    | 7-point grading scale | External examination | Oral exam based on a project | English  |

|                                                                                       |         |    |                       |                      |                               |         |
|---------------------------------------------------------------------------------------|---------|----|-----------------------|----------------------|-------------------------------|---------|
| <a href="#">Entrepreneurship, Innovation and Business Models</a><br>(ESNICTEK1K2)     | Course  | 5  | 7-point grading scale | Internal examination | Written or oral exam          | English |
| <a href="#">Communication Technologies and Service Architectures</a><br>(ESNMICTM1K3) | Course  | 5  | 7-point grading scale | Internal examination | Written or oral exam          | English |
| <b>2 SEMESTER</b>                                                                     |         |    |                       |                      |                               |         |
| <a href="#">Application Development</a><br>(ESNMICTM2P6)                              | Project | 10 | 7-point grading scale | Internal examination | Oral exam based on a project  | English |
| <a href="#">Interaction Design</a><br>(ESNICTEK2K5)                                   | Course  | 5  | 7-point grading scale | Internal examination | Written or oral exam          | English |
| <a href="#">Development of ICT and Media Services</a><br>(ESNMICTM2K2)                | Course  | 5  | 7-point grading scale | Internal examination | Written or oral exam          | English |
| <b>3 SEMESTER</b>                                                                     |         |    |                       |                      |                               |         |
| <a href="#">Master's Project</a><br>(ESNMICTM3P2)                                     | Project | 15 | 7-point grading scale | External examination | Master's thesis/final project | English |
| <a href="#">Elective course module package</a><br>Choose 1 course module              | Course  | 5  |                       |                      |                               |         |

Offered as: 1-professional

Study programme: Management of ICT Innovations (mICT-MII)

| Module name                                                                       | Course type | ECTS | Applied grading scale | Evaluation method    | Assessment method             | Language |
|-----------------------------------------------------------------------------------|-------------|------|-----------------------|----------------------|-------------------------------|----------|
| <b>1 SEMESTER</b>                                                                 |             |      |                       |                      |                               |          |
| <a href="#">Organizations and Innovations</a><br>(ESNMICTM1P5)                    | Project     | 10   | 7-point grading scale | External examination | Oral exam based on a project  | English  |
| <a href="#">Entrepreneurship, Innovation and Business Models</a><br>(ESNICTEK1K2) | Course      | 5    | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <a href="#">Technology Management and Business Processes</a><br>(ESNMICTM1K2)     | Course      | 5    | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <b>2 SEMESTER</b>                                                                 |             |      |                       |                      |                               |          |
| <a href="#">Design and Innovation</a><br>(ESNMICTM2P5)                            | Project     | 10   | 7-point grading scale | Internal examination | Oral exam based on a project  | English  |
| <a href="#">Interaction Design</a><br>(ESNICTEK2K5)                               | Course      | 5    | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <a href="#">Cognitive Psychology</a><br>(ESNMICTM2K1)                             | Course      | 5    | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <b>3 SEMESTER</b>                                                                 |             |      |                       |                      |                               |          |
| <a href="#">Master's Project</a><br>(ESNMICTM3P2)                                 | Project     | 15   | 7-point grading scale | External examination | Master's thesis/final project | English  |
| <a href="#">Elective course module package</a><br>Choose 1 course module          |             | 5    |                       |                      |                               |          |

Offered as: 1-professional

| Study programme: ICT Cyber and Information Security (mICT-CIS)                      |             |       |                       |                      |                               |          |
|-------------------------------------------------------------------------------------|-------------|-------|-----------------------|----------------------|-------------------------------|----------|
| Module name                                                                         | Course type | ECT S | Applied grading scale | Evaluation method    | Assessment method             | Language |
| <b>1 SEMESTER</b>                                                                   |             |       |                       |                      |                               |          |
| <a href="#">Enterprises Cyber Security</a><br>(ESNMICTM1P6)                         | Project     | 10    | 7-point grading scale | External examination | Oral exam based on a project  | English  |
| <a href="#">Entrepreneurship, Innovation and Business Models</a><br>(ESNICTEK1K2)   | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <a href="#">Cybercrime and Information Security Law</a><br>(ESNMICTM1K1)            | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <b>2 SEMESTER</b>                                                                   |             |       |                       |                      |                               |          |
| <a href="#">Privacy &amp; Security Frameworks in Organizations</a><br>(ESNMICTM2P4) | Project     | 10    | 7-point grading scale | Internal examination | Oral exam based on a project  | English  |
| <a href="#">Interaction Design</a><br>(ESNICTEK2K5)                                 | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <a href="#">Cyber Security and Trust</a><br>(ESNICTEK3K4)                           | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam          | English  |
| <b>3 SEMESTER</b>                                                                   |             |       |                       |                      |                               |          |
| <a href="#">Master's Project</a><br>(ESNMICTM3P2)                                   | Project     | 15    | 7-point grading scale | External examination | Master's thesis/final project | English  |
| <a href="#">Elective course module package</a><br>Choose 1 course module            | Course      | 5     |                       |                      |                               |          |

| Elective course module package<br>Choose 1 course module                 |             |       |                       |                      |                      |          |
|--------------------------------------------------------------------------|-------------|-------|-----------------------|----------------------|----------------------|----------|
| Module name                                                              | Course type | ECT S | Applied grading scale | Evaluation Method    | Assessment method    | Language |
| <a href="#">Markets, Regulation and Standardization</a><br>(ESNMICTM3K2) | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam | English  |
| <a href="#">Identity and Access Management</a><br>(ESNICTEK2K2)          | Course      | 5     | 7-point grading scale | Internal examination | Written or oral exam | English  |

## § 19: ADDITIONAL INFORMATION

## § 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the dean and enters into force as of 01.09.2020.

The Study Board does not offer teaching after the previous curriculum from 2016 after the summer examination 2022.

The Study Board will offer examinations after the previous curriculum, if there are students who have used examination attempts in a module without passing. The number of examination attempts follows the rules in the Examination Order.

## § 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS