Master’s Degree Programme
IT Product Development

Revised 24 October 2017
Master’s Degree Programme

- Important choices
- Structure of the Master’s Degree Programme
- Requirements for the study programme
- Admission
- Practical information

- Slides: [www.cs.au.dk/studieorientering](http://www.cs.au.dk/studieorientering)
Important Choices

During Master’s degree studies:

• Specialization?
• Elective courses?
• Study abroad?
• ph.d.?
## IT Product Development Bachelor (2017 onwards)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; sem</td>
<td>Sketching and Physical Prototyping (10 ECTS)</td>
<td>10 ECTS</td>
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<tr>
<td></td>
<td>Introduction to Programming (10 ECTS)</td>
<td>10 ECTS</td>
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<td></td>
<td>Calculus alpha (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Sem</td>
<td>Introduction to Databases (5 ECTS)</td>
<td>5 ECTS</td>
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<tr>
<td></td>
<td>The Web of Things (5 ECTS)</td>
<td>5 ECTS</td>
</tr>
<tr>
<td></td>
<td>IT Product Design Project (20 ECTS)</td>
<td>20 ECTS</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Sem</td>
<td>Physical Computing (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td></td>
<td>Introduction to Human-Computer Interaction (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td></td>
<td>Software Engineering and Architecture (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; Sem</td>
<td>Computer Architecture, Networks and Operating Systems (10 ECTS)</td>
<td>10 ECTS</td>
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<tr>
<td></td>
<td>Experimental Systems Development (10 ECTS)</td>
<td>10 ECTS</td>
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<tr>
<td></td>
<td>Introductory Statistics and Data Analysis Using R (5 ECTS)</td>
<td>5 ECTS</td>
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<tr>
<td></td>
<td>Organizing and Business Models for IT-Innovations (5 ECTS)</td>
<td>5 ECTS</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; Sem</td>
<td>Design as Products, Services, Systems and Experience (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td></td>
<td>Elective (recom: Distributed Systems and Security) (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td></td>
<td>Foundations of Algorithms and Data Structures (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt; sem</td>
<td>Social and Aesthetic Interaction Design (10 ECTS)</td>
<td>10 ECTS</td>
</tr>
<tr>
<td></td>
<td>Bachelor Project (15 ECTS)</td>
<td>15 ECTS</td>
</tr>
</tbody>
</table>

- Taught in **Danish**, except for courses marked 🇬🇧
- Bachelor in IT (product development) or similar is prerequisite for master level courses in IT product development

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IT Product Development Master's Programme
Master’s Degree Programme

- Important choices
- **Structure of the Master’s Degree Programme**
  - Box diagram
  - Elective courses
- Requirements for the study programme
- Admission
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# IT Product Development Master

## Specializations:

<table>
<thead>
<tr>
<th>Specialization</th>
<th>1st sem</th>
<th>2nd Sem</th>
<th>3rd Sem</th>
<th>4th Sem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Design</td>
<td>Elective (10 ECTS)</td>
<td>UBI 1</td>
<td>Study abroad / elective courses (30 ECTS)</td>
<td>Thesis (30 ECTS)</td>
</tr>
<tr>
<td></td>
<td>Recommended: HCI 1</td>
<td>Design 1</td>
<td>Recommended electives: HCI 3 + UBI 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UBI 2a (5 ECTS)</td>
<td>Design 2a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Innovation Project (20 ECTS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCI</td>
<td>HCI 1</td>
<td>(HCI 2)</td>
<td>HCI 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UBI 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UBI 2a (+2b)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>UBI 3</td>
<td></td>
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</tr>
</tbody>
</table>

- Programme must include all courses
- Programme must include at least one of HCI 1, HCI 3, UBI 3

## Shared with CS

- **Ubiquitous computing and Interaction**
  - UBI 1
  - UBI 2a (+2b)
  - UBI 3

## Notes

- Elective courses (10 ECTS)
- Recommended electives: HCI 3 + UBI 3

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IT Product Development Master's Programme
Industrial Design

| 1st sem | Shape-changing Objects and Spaces (10 ECTS) | PGK |
| 2nd Sem | Designing Urban Interventions (5 ECTS)     | KA  |

- Mandatory courses

Industrial Design
- Peter Gall Krogh
- Majken Kirkegård Rasmussen
- Devarajan Ramanujan
- Karthikeya Acharya
### Ubiqitous Computing and Interaction

<table>
<thead>
<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt; sem</th>
<th>Building the Internet of Things with P2P and Cloud Computing (10 ECTS)</th>
<th>NOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Sem</td>
<td>Augmented Reality (5 ECTS)</td>
<td>KG</td>
</tr>
<tr>
<td></td>
<td>Advanced Augmented Reality Project (5 ECTS)</td>
<td>KG</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Sem</td>
<td>Advanced Data Management and Analysis (10 ECTS)</td>
<td>IA+PK</td>
</tr>
</tbody>
</table>

- First 15 ECTS are mandatory courses

**Ubiqitous Computing and Interaction**
- Kaj Grønbæk
- Niels Olof Bouvin
- Marianne Graves Petersen
- Jo Vermeulen

**Data-intensive Systems**
- Ira Assent
- Panagiotis Karras
### Human-Computer Interaction

<table>
<thead>
<tr>
<th>Semesters</th>
<th>Courses</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st sem</td>
<td>Interactivity and Computer Mediation - Concepts, Theories,</td>
<td>SB</td>
</tr>
<tr>
<td></td>
<td>Methods, Cases (10 ECTS)</td>
<td></td>
</tr>
<tr>
<td>2nd sem</td>
<td>Designing Interactive Technologies (10 ECTS)</td>
<td>SB</td>
</tr>
<tr>
<td>3rd sem</td>
<td>Multimodal Interaction (10 ECTS)</td>
<td>EH</td>
</tr>
</tbody>
</table>

- Semesters have progression
  - 1st or 3rd semester is prerequisite for the 2nd semester

### Computer Mediated Activity

- Susanne Bødker
- Olav Bertelsen
- Eve Hoggan

### Use, Design and Innovation

- Morten Kyng
Choices

- Select elective courses to build your personal competence profile with a view towards the final thesis writing
- Study abroad: select university and courses to support and strengthen your specialization
- Thesis: you should contact an advisor early (prior semester)
Recent Master’s Theses

- Exploring The Design Space of an Office Chair: Qualities and Challenges of Embedded E-Textile Interaction.
- Augmenting Play Bases.
- Graphene-Based Interaction Design: Open-ended Constructive Play for Children.
- Using Roles in Games to Provide an Engaging and Supportive Co-Experience Among Children.
- Mapping and exploring the retail design space to enhance the in-store shopping experience through IT solutions.
- Printing Functionality. Empowering Designers to Create Interactive Prototypes with 3D Printing.
- Planning and Evaluating Design Process Courses with Public School Students in the Subject Craftmanship and Design.
- Offering Blind Participants Hands-on Experience in a Design Process.
- Re-Positioning Social Networks to Support Urban Garden Communities.
- Designing Experience First.
- CapFloor: An Interactive Luminous Floor Using Capacitive Sensing.
- A Window into the Soul of Photographer: Learning Photography through haptic Communication.
- HITMACHINE.
- Can E-Paper Advance Local News?
- ScrAPP: Mobile Technologies to Support Sustainability for CNC Cutting Machines in Creative Environments.

Elective Courses

Fall

In addition to earlier mentioned specialization courses

- **CS**
  - Distributed Systems and Security (10 ECTS) (bachelor course)
  - Science-based IT Entrepreneurship and Innovation (5 ECTS, Q1)
  - Context awareness (5 ECTS, Q2)

- **ENG**
  - Internet of Things (10 ECTS)

- **Arts**
  - Digital Culture (10 ECTS)
  - Digital Aesthetics (15 ECTS)

- **BSS**
  - Marketing and Consumer Behaviour (10 ECTS)
  - Product Development and Innovation Management (10 ECTS)
  - Employee Emotions, Attitudes & Behaviour (5 ECTS)
Elective Courses

Fall & Spring:

- **CS**
  - Project Work in IT Product Development (5 or 10 ECTS)
    - Experiments/prototypes, empirical work, thesis preparation

- **ASE**
  - GUI programmering (I4GUI) (5 ECTS)
  - Smartphone Applications (ITSMAP) (5 ECTS)


- **CS**
  - Identity and Privacy (5 ECTS, summer 2018)
    - Prerequisites: Distributed Systems & Security

- **Arts**
  - Game.Play.Theory (10 ECTS, summer)
    - Identical to Computer game theory (Q3+Q4)
  - Digital Living (10 ECTS, summer)
Elective Courses

Spring
In addition to earlier mentioned specialization courses (relevant only if you do not follow Box Diagram)

- ENG
  - Modelling and Verification (10 ECTS)

- Arts
  - 3D Interaction (10 ECTS)
  - Computer Game Theory (10 ECTS)
  - Sound and Interaction (10 ECTS)

- BSS
  - Marketing Management (10 ECTS)
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Requirements for the Study Programme

- 120 ECTS in total
  - At least 90 ECTS graduate level IT Product Development
  - At least 180 ECTS IT / IT product Development in bachelor + master’s

- Mandatory courses
  - Shape-changing Objects and Spaces (10 ECTS)
  - Building the Internet of Things with P2P and Cloud Computing (10 ECTS)
  - Designing Urban Interventions (5 ECTS)
  - Augmented Reality (5 ECTS)
  - Innovation Project (20 ECTS)

- Restricted elective: at least one of the courses:
  - Interactivity and Computer Mediation – Concepts, Theories, Methods, Cases (10 ECTS)
  - Multimodal Interaction (10 ECTS)
  - Advanced Data Management and Analysis (10 ECTS)

- Thesis (30 ECTS)
Yellow Brick Requirement

- All Programmes (Bachelor or Master’s) must include 60 ECTS passed at Science and Technology, Aarhus University

- This has implications for credit transfer!
Master’s Degree Programme

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Admission

- When bachelor completed
- You apply for admission into Master's Programme
- ... or apply for admission into PhD studies
- Admission
  - You must actively apply for admission
  - You must actively apply for SU
  - Making a study programme (contract) does not suffice
- http://kandidat.au.dk/optagelse/adgangskrav/
Temporary Admission

- If you lack X<30 ECTS in your bachelor, you may for a 6 months period take 30-X ECTS courses to be part of your future Master’s Programme
- No temporary admission if you still lack a mandatory course and you have failed it twice!
- Never delay (re)examination in a mandatory course!
- This might have SU-related consequences!
PhD studies?

- Apply for PhD studies!
  - For deadlines see http://talent.au.dk/phd/scienceandtechnology/opencalls/
  - You receive a salary while studying!
  - http://talent.au.dk/phd/scienceandtechnology/programmes/computer-science/
  - Apply for PhD studies directly following your bachelor studies, during your Master’s studies or following your Master’s degree. (Why not apply early?)
  - Contact Anders Møller for info http://pure.au.dk/portal/en/amoeller@cs.au.dk

3 years

3 years

2 years

BSc in Computer Science

MSc in Computer Science

PhD

IT Product Development Master’s Programme
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- Practical information
  - Contracts
  - Signing up for courses
  - Study abroad
  - ”Fremdriftsreform”
  - Student Guidance
Contracts

- [http://kontrakt.scitech.au.dk/](http://kontrakt.scitech.au.dk/)

- **Master’s Contract:**
  - Complete before signing up for first course in Master’s Programme
    - Also in case of temporary admission
    - You may only sign up for courses mentioned in your contract
  - Revise at semiannual interviews in April and October
    - You will have a friendly chat with Søren & Gudmund

- **Thesis Contract:**
  - Sign at start of thesis work
Signing up for courses

- Sign up:
  - December 1 – March 15 for courses in Summer
  - May 1-5 for courses in (Summer &) Fall
  - November 1-5 for courses in the Spring
  - Advance approval of credit transfer is needed for courses from outside ST, see [http://studerende.au.dk/en/studies/subject-portals/computer-science/student-counselling/credit-transfer/](http://studerende.au.dk/en/studies/subject-portals/computer-science/student-counselling/credit-transfer/) (apply well in advance!)

- Schedule for elective courses:
  - watch out for collisions!
Study abroad

- General information (destinations, deadlines, procedures, etc)
  - http://studerende.au.dk/studier/fagportaler/datalogi/udlandsophold/

- Study Abroad Fair 5 October 2017:
  - http://studerende.au.dk/au-study-abroad-fair/

- Application Deadline: 1 December 2017

- Selected destination:

  - TuE i Eindhoven has a semester from their ID Master module that fits nicely into an AU IT Product Development program:
    - Contact: Søren Poulsen
Study abroad

- Credit transfer / course selection
  - Select potential universities based on course offerings [http://scitech.studyabroad.au.dk/](http://scitech.studyabroad.au.dk/).
  - Apply for exchange through AU GO (opens for application approx. 1 week before deadline) [http://scitech.studyabroad.au.dk/](http://scitech.studyabroad.au.dk/).
  - When you have been admitted for exchange at specific university you need **advance approval of courses**.
  - If foreign university allows less than 30 ECTS then top up with summer courses or project work.
  - Update Master’s contract / book an interview.
  - Contact Gudmund/Søren

- Other aspects?
  - Contact Mette Glerup Thomsen, ST international coordinator, [http://studerende.au.dk/studier/fagportaler/datalogi/udlandsophold/kontakt/](http://studerende.au.dk/studier/fagportaler/datalogi/udlandsophold/kontakt/)
Fremdriftsreform ("study progress reform")

- If you follow the recommended program of study (30 ECTS per semester), take courses in the correct order (the Box Diagrams) and pass all courses at the ordinary exam or at the first scheduled re-exam then you need not worry about the study progress reform.
- If you fall behind or do not pass a course at the latest by the first reexamination then contact us for advice and guidance on your individual study program.
- If you ignore this advice and believe that “it will be fine", it may have serious consequences!
- If you do not pass minimum 45 ECTS per year or you do not complete your master’s program within six months after the prescribed time you are automatically signed out of the study program / out of the university [http://studerende.au.dk/studier/fagportaler/datalogi/fremdriftsreformen/].
- If you fail an exam in an elective course, then that course has become mandatory! If you have made an erroneous choice of an elective course please contact us for guidance immediately!
Student Counselor

- The student counselor may help you
  - Magnus Høholt Kaspersen


- Possible topics:
  - Change of study programme, delay, leave of absence, withdrawel.
  - Illness.
  - Study regulations, selecting supplementary subjects.
Information Meetings

Thursday 28 September 2017 (5794-127):
- 14-15: IT: Bachelor Program
- 15-16: IT-Product Development: Master’s Program

Friday 29 September 2017 (PBA Aud, 5335-016):
- 14-15: Computer Science: Bachelor Program
- 15-16: Computer Science: Master’s Program
- 16-17: Computer Science & IT: Master’s Thesis
You can have influence!

- Join a committee
  - Contact the chair
  - You may look up current student members on the web

- Education Committee
  - Chair: Gerth Stølting Brodal, gerth@cs.au.dk
  - [http://cs.staff.au.dk/boards-and-committees/education-committee/](http://cs.staff.au.dk/boards-and-committees/education-committee/)

- Office Committee
  - Chair: Annemette Hammer, ahammer@cs.au.dk

- PR Committee
  - Chair: Søren Poulsen, poulsen@cs.au.dk
  - [http://cs.staff.au.dk/boards-and-committees/pr-committee/](http://cs.staff.au.dk/boards-and-committees/pr-committee/)
  - Formand: Søren Poulsen, poulsen@cs.au.dk
  - [http://cs.staff.au.dk/boards-and-committees/pr-committee/](http://cs.staff.au.dk/boards-and-committees/pr-committee/)

- Lab Committee
  - Chair: Søren Poulsen, poulsen@cs.au.dk
  - [http://cs.staff.au.dk/boards-and-committees/lab-committee/](http://cs.staff.au.dk/boards-and-committees/lab-committee/)
Efterår
Skitsering og fysisk prototypedesign
Physical Computing

Shape-changing objects and spaces
Multimodal Interaction

Forår
IT-Produktdesignprojekt
Bachelorprojekt
Social og æstetisk interaktionsdesign

Designing Urban Intervention
Innovationsprojekt

labtools@cs.au.dk
- chomskylab.dk
- **Træffetider på Ada-2, Hver dag 09.15-10.00**
- **Træffetid i Chomsky i løbet af E2017**

- Kom med dit input!
- Clockwork - Designing For Reflection
- Skyline Outlier Ensemble
- Exploring The Design Space of an Office Chair: Qualities and Challenges of Embedded E-Textile Interaction.
- Augmenting Play Bases.
- Graphene-Based Interaction Design: Open-ended Constructive Play for Children.
- Using Roles in Games to Provide an Engaging and Supportive Co-Experience Among Children.
- Mapping and exploring the retail design space to enhance the in-store shopping experience through IT solutions.
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- Planning and Evaluating Design Process Courses with Public School Students in the Subject Craftmanship and Design.
- Offering Blind Participants Hands-on Experience in a Design Process.
- Re-Positioning Social Networks to Support Urban Garden Communities.
- Designing Experience First.
- CapFloor: An Interactive Luminous Floor Using Capacitive Sensing.
- Developing Multi Touch Interactive Visualizations to Explore Big Data.
- The Myth of Natural User Interfaces: How Contextual Understanding and Existing Knowledge Lead Towards Natural Interaction