Welcome!

Master of Science Programme in Applied Data Science (N2ADS)

2023

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Programme Direction in Computer Science

- Programme Director (Bachelor’s)
  - Alex Gerdes

- Programme Director (Master’s)
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- Study Counsellor:
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- Viceprefekt, Undergraduate Education (common with Chalmers)
  - Roger Johansson

- Student Office
  - https://studentportal.gu.se/english/my-studies/cse
University of Gothenburg (GU)

- One of the largest in northern Europe
- 53,845 students
- 6,670 employees
- 8 faculties
  - The IT Faculty
- 39 departments
  - Computer Science and Engineering (CSE)
- Cutting-edge research in several areas, e.g.
  - Arvid Carlsson, Nobel Prize in Physiology or Medicine, 2000
Organisation Overview

University of Gothenburg

IT Faculty

Chalmers University of Technology

Departments:

- Computer Science and Engineering Department

Divisions:

- Data Science and AI
- Computer Engineering
- Computer science
- Software Engineering and Interaction Design
IT Faculty’s Programmes

Bachelor’s level:
• Datavetenskapligt program, 180 hec
• Software Engineering and Management, 180 hec
• Systemvetenskap: IT, människa, organisation, 180 hec
• Kognitionsvetenskapligt kandidatprogram, 180 hec

Master’s level:
• Computer Science, 120 hec
• Software Engineering, 120 hec
• Applied Data Science, 120 hec
• Game Design & Technology Master’s Programme, 120 hec
• Digital Leadership, 120 hec
• Lärande, kommunikation och IT, 60 hec
• Master in Communication, 120 hec
• Master in Human-centered AI, 120 hec
Most of the department is located on the Johanneberg Campus, in the EDIT building.
The EDIT House

- CSE Student Office/Study Counsellor: level 4V, corridor 4
The CSE Department

- Extremely dynamic, creative and international
  - ~70 teachers/researchers from various countries
  - ~70 graduate students from ~30 countries
  - Active collaboration with many other universities worldwide
  - Active collaboration with many companies, some of which have come about as an extension of research at CS&E
- World class research
  - Enormous breadth: mathematics/logic, formal methods, dependable real-time systems, algorithms, bioinformatics, …
- Departmental homepage:
  - http://www.chalmers.se/cse/
  - http://www.cse.gu.se/
CS&E: Two of our most distinguished researchers

Thierry Coquand
Logic and mathematics

Per Stenström
Hardware, multicore
Applied Data Science
Master's Programme
What is the programme about?

• Data science is concerned with extracting meaning from large volumes of data.

• It is a field that has grown rapidly in recent years as a result of the increasing availability of large data sets and the opportunities and challenges that they present.

• Central topics within data science include data mining, machine learning, databases, and the application of data science methods in natural sciences, life sciences, business, humanities, and social sciences, as well as in industry and society.
Programme Structure

• A full year of studies is 60 credits (higher education credits, hec)
  — 30 credits in each semester (Autumn “HT” and Spring “VT”)
• Each semester is divided into two study periods
  — (an academic year has study periods 1, 2, 3 and 4)
• Typical course is 7.5 credits. You are expected to pass:
  — 4 courses per semester, i.e.
  — 2 courses per study period
• You need 120 credits to graduate.
• At least 82.5 credits on advanced level and in the main field of study (Data science), usually 52.5 credits in courses and 30 credits master’s thesis.
## Programme Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro DS</td>
<td>Statistical methods DS</td>
<td>Applied Machine learning (*) or elective course</td>
<td>Comp techniques for large-scale data</td>
<td></td>
</tr>
<tr>
<td>Python for DS</td>
<td>Applied mathematical thinking</td>
<td>Databases or elective course</td>
<td>Applied Machine learning(*) or Advanced databases</td>
<td></td>
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</tbody>
</table>
## Programme Structure

### Year 1

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Intro DS</td>
<td>Statistical methods for DS</td>
<td>Applied Machine learning (*) or elective course</td>
<td>Comp techniques for large-scale data</td>
</tr>
<tr>
<td>2</td>
<td>Python for DS</td>
<td>Applied mathematical thinking</td>
<td>Databases or elective course</td>
<td></td>
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</table>

### Year 2

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<thead>
<tr>
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<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Project course or Deep ML</td>
<td>Research methods in DS</td>
<td>Master’s thesis</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Elective course</td>
<td>Elective course</td>
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First term courses

• Python for Data scientists

• Introduction to Data science
First term courses

• Python for Data scientists

• Introduction to Data science

• Applied Mathematical Thinking (not compulsory but indirectly compulsory for students with non-technical background)

• Statistical Methods for Data science
Courses within the program

- Introduction to data science
- Python for data scientists
- Applied mathematical thinking
- Statistical methods for data science
- Applied Machine learning
- Databases (b)
- Computational techniques for large-scale data
- Research methods for DS
- Master’s thesis in data science

- Deep machine learning
- Machine learning for NLP
- Advanced databases
- Project course
- Computational methods in Bioinformatics
- Advanced topics in ML
- Design of AI systems
- Structured ML
- ..
- Many more elective courses!

Core courses of the program

Elective courses
Course Organization

- Read your course plans!!!
- All course plans can be found in Canvas or at https://utbildning.gu.se/education/courses-and-programmes/course-syllabus
- Lectures are normally 2 x 45 min (15 min break)
- Participate in labs and exercises
- Sign up for your exam 2 weeks before ”Exam week” in LPW (”Ladok on the web”) on your University of Gothenburg student account.
Courses

• Study abroad? Most suitable is term 3 (or master’s thesis)

• Core courses: if you have taken a very similar course you can switch to another course -> study counsellor or program director!

• Elective course: You can pick the courses you like (as long as you satisfy the prerequisites of the courses you want)

• Only courses within our department are free of charge for international students.
Master’s Thesis (DIT911)

- 20 weeks (30 credits)
- performed individually, or in pairs (recommended)
- In the Master Thesis the student shall *integrate, deepen and expand his or her knowledge* within a restricted area of what has been previously studied at courses within the Master’s programme. The purpose of the Master’s Thesis is also for the student to gain a broad understanding and skills in engineering and scientific work methods.
- The subject must be approved by the Program director and examiner before the work starts.
- Prerequisite: 60 credits on advanced level.
- *Start thinking about it now!* What area? Who could be your supervisor?
Course Evaluations

• Survey sent out after every course

• Participate!!! – we need data!

• Help us improve our courses!

• You will help new students like students before have helped you

• Constructive criticism is always welcome!
Practical information

• Study planning / counselling:
  Study Counsellor
  svl@cse.gu.se

• Study administrative issues:
  Student Office
  student_office.cse@chalmers.se (4th floor, EDIT-building)

• Courses / programme in general
  Talk to the course’s teacher, or
  Programme Director ADS: Birgit Grohe

Social activity upcoming in 2nd week of studies!

I will visit a lecture in the Intro DS course on 4/9.