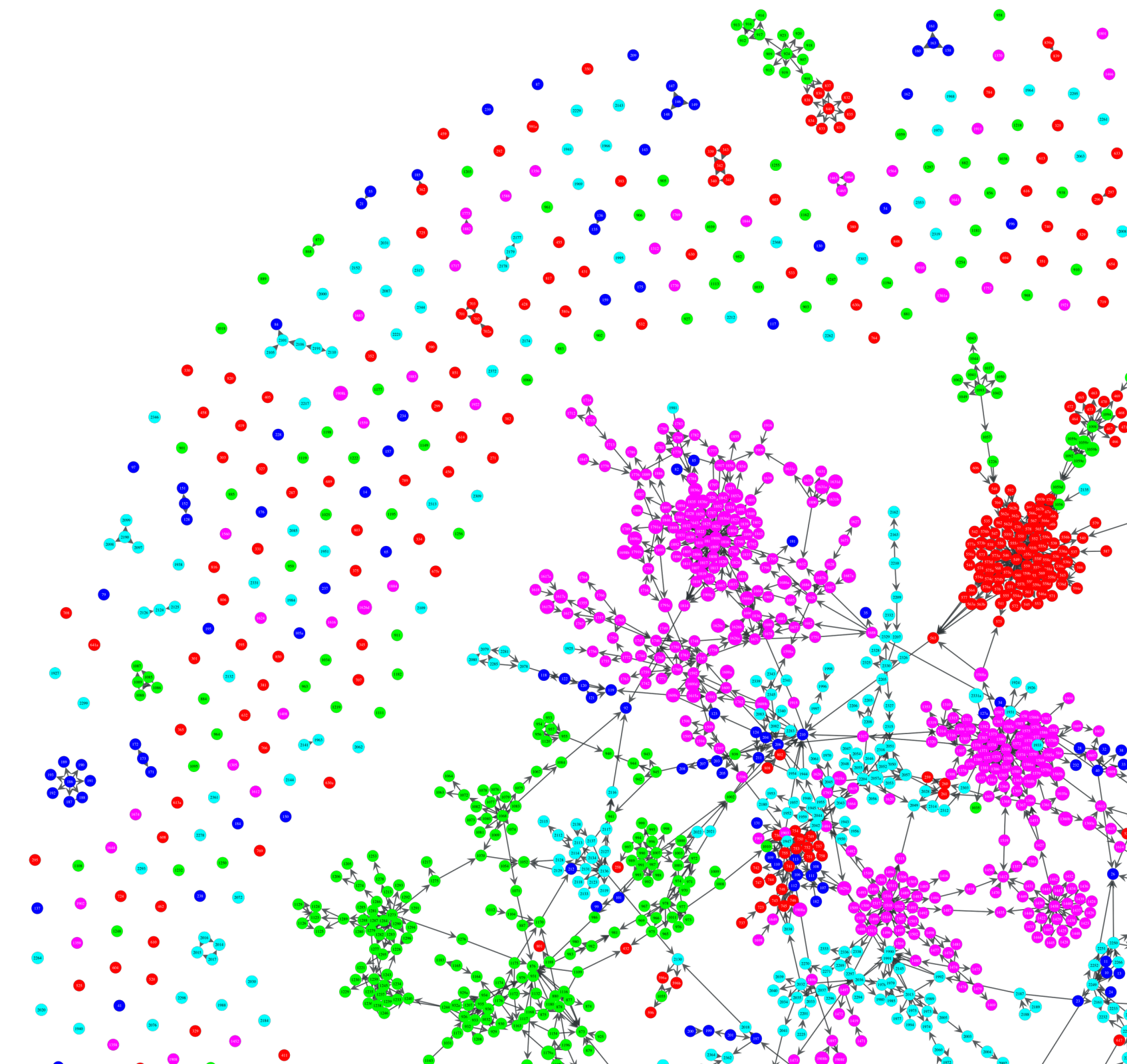




Master Data Engineering and Analytics



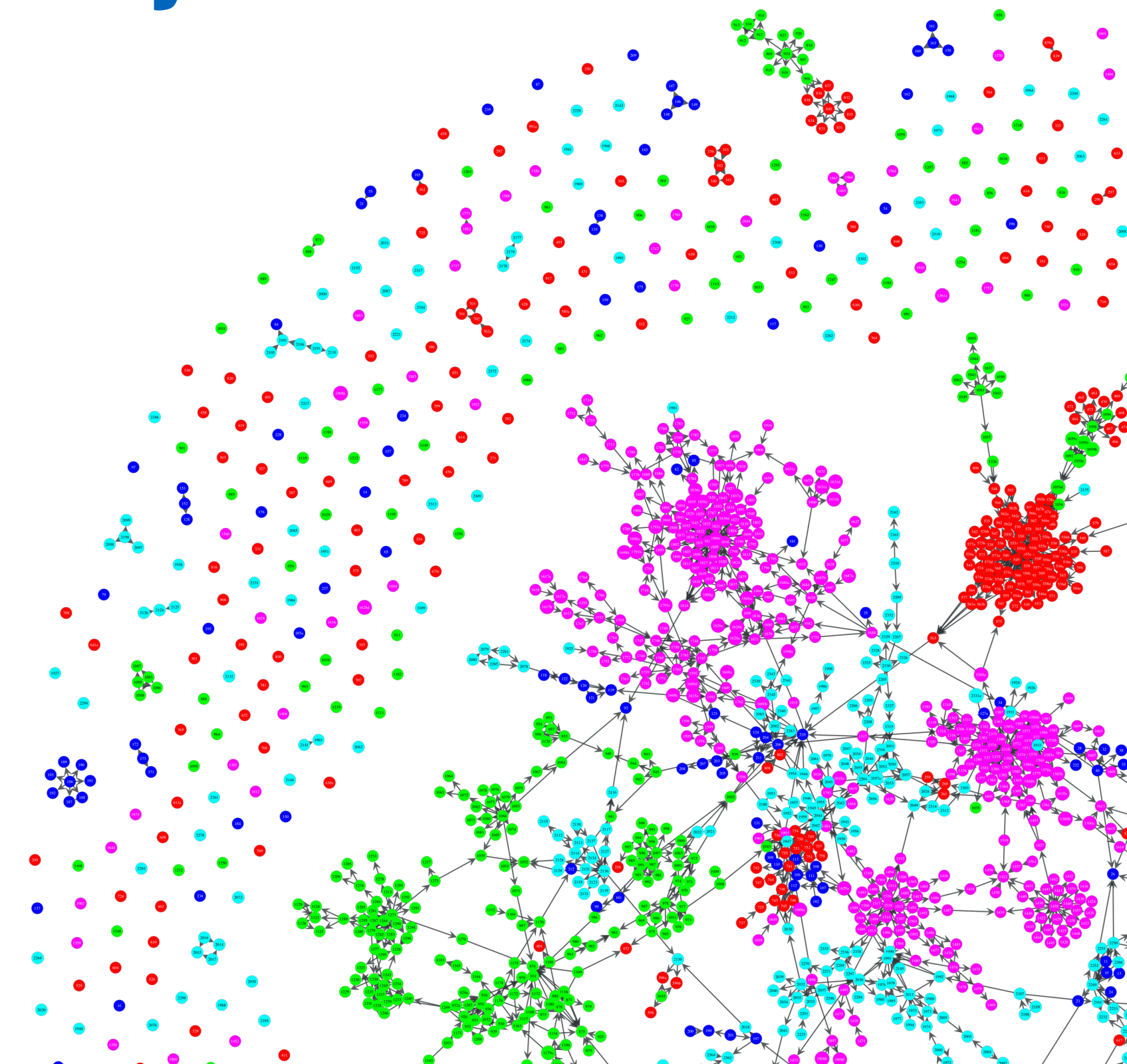
Christoph Rotte
Program
Coordinator





Master Data Engineering and Analytics

Master's Day

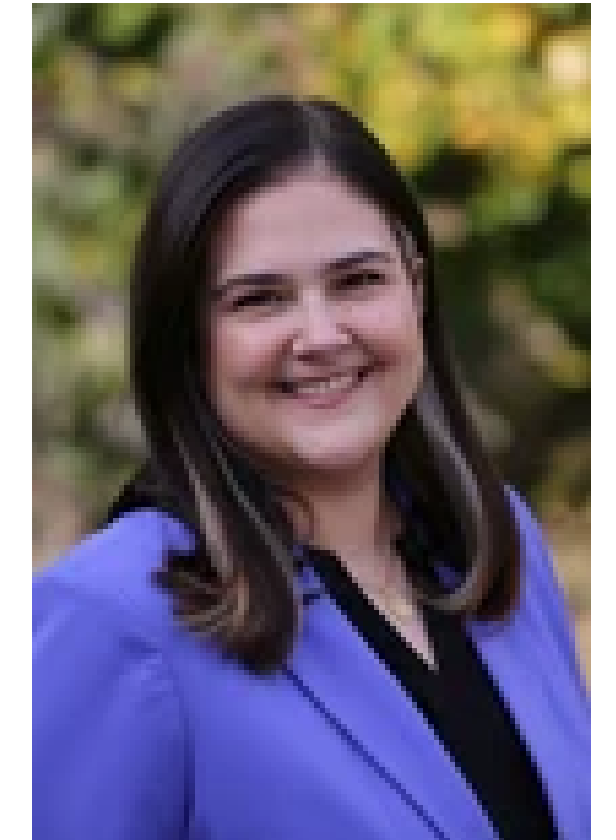
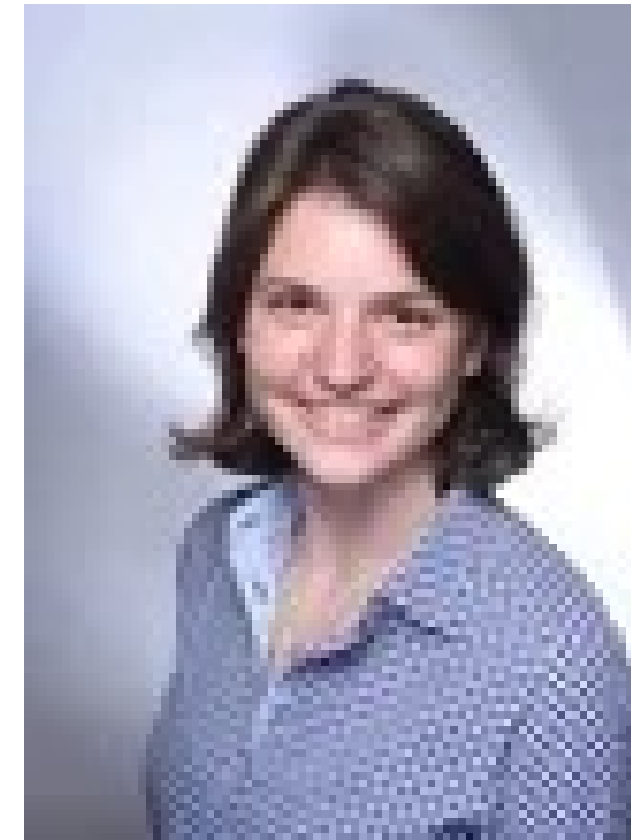




Who? Where? What?

Academic Student Advisors

- Dr. Sandra Kemler
- Katharina Rieke
- Imme Proske
- Sarah Aragon-Hahner



International Student Advisor

- Lena Krone

Secretary of the Examination Board

- Huda Hossain

Program Coordinator

- Christoph Rotte





Websites

[Application website](https://www.cit.tum.de/en/cit/studies/degree-programs/master-data-engineering-and-analytics/)

Links all relevant information

- Curriculum structure
- FPSO (examination regulations)
- APSO (TUM general regulations)
- Guided research
- Application project
- Thesis information

<https://www.cit.tum.de/en/cit/studies/degree-programs/master-data-engineering-and-analytics/>

TUM School of Computation, Information and Technology
Technical University of Munich

Home > Studies > Degree Programs > Master Data Engineering and Analytics

Data Engineering and Analytics

Master of Science (M.Sc.)

Before Studying | During your Studies | Contact

Key Data

Type of Study: Full-time

Standard Duration of Studies: 4 semesters

Credits: 120 ECTS

Main Locations: Garching

Start of Degree Program: Summer or Winter semester

Language of Instruction: English

Costs: [Semester fees](#), [tuitions fees for Students from Non-EU Countries](#)

Professional Profile: Data Science and Artificial Intelligence

Application and Admission

The M.Sc. Data Engineering and Analytics welcomes students with a Bachelor's degree in Informatics who want to specialize in the area of processing and analyzing extremely large amounts of data.

The aptitude assessment for the M.Sc. Data Engineering and Analytics is a two-stage process in which we assess your qualification with regard to the special qualitative requirements of this Master's program.

TUM School of Computation, Information and Technology
Technical University of Munich
Arcisstraße 21
80333 München

Application
Questions about application:
Email: mscapp-in.asa@xcit.tum.de
Phone: +49 89 289 17867
Consultation hours

Academic Advising Informatics
Inquiries on Module Planning and Program Structure

Huda Hossain
Secretary of the Examination Board Informatics
M.Sc. Data Engineering and Analytics
Office: 00.10.041



Eligibility of Application

Analysis of the Curriculum

You can check if you are eligible for the DEA master at our [application website](#).

Check for equivalence with either:

- BSc. Informatics of TUM
- BSc. Mathematics with Informatics as a minor of TUM



Eligibility of Application

Analysis of the Curriculum - Equivalence with BSc. Informatics (TUM)

<i>Basics in Informatics</i>	
Einführung in die Informatik / Introduction to Informatics	IN0001, 6 ECTS
Datenbanken / Databases	IN0008, 6 ECTS
Rechnerarchitektur / Computer Architecture: Organization and Technology	IN0004, 8 ECTS
Softwaretechnik / Software Engineering	IN0006, 6 ECTS
Betriebssysteme und Systemsoftware / Operating Systems and System Software	IN0009, 6 ECTS
Rechnernetze und Verteilte Systeme / Computer Networks, Distributed	IN0010, 6 ECTS
<i>Mathematical and theoretical basics</i>	
Algorithmen und Datenstrukturen / Algorithms and Data Structures	IN0007, 6 ECTS
Theoretische Informatik / Theory of Computation	IN0011, 8 ECTS
Diskrete Strukturen / Discrete Structures	IN0015, 8 ECTS
Lineare Algebra / Linear Algebra	MA0901, 8 ECTS
Analysis / Calculus	MA0902, 8 ECTS
Diskrete Wahrscheinlichkeitstheorie / Discrete Probability Theory	IN0018, 6 ECTS

Bridging courses for missing modules.

Application directly declined if:

- **Mathematical and theoretical basics ≥ 14 ECTS missing**
- **In total > 30 ECTS missing**



Eligibility of Application

Analysis of the Curriculum - Equivalence with BSc. Mathematics with Informatics as a minor of TUM

Basics in Mathematics	
Lineare Algebra und Diskrete Strukturen 1+2 / Linear Algebra and Discrete Structures I+II	MA1101, MA1102, 20 ECTS
Analysis 1+2 / Calculus I+II	MA1001, MA1002, 20 ECTS
Einführung in die Wahrscheinlichkeitstheorie / Introduction to Probability Theory	MA1401, 5 ECTS
Further modules	≥ 7 ECTS

Bridging courses for missing modules.

Application directly declined if:

- **Basics in Informatics ≥ 12 ECTS missing**
- **In total > 30 ECTS missing**

Basics in Informatics	
Einführung in die Informatik und Programmieren / Introduction to Informatics and Programming	IN0001, 6 ECTS
Algorithmen und Datenstrukturen / Algorithms and Data Structures	IN0007, 6 ECTS
Datenbanken / Databases	IN0008, 6 ECTS
Further modules	≥ 12 ECTS



Bridging Courses

Non-computer-science and non-mathematics bachelors:

- Please note that the **bridging courses MUST ALL be passed in your first year** of study!

Be careful:

- Some courses and exams are only offered in either winter or summer semester.
- Please take bridge courses seriously: Plan your schedule so that you have enough time for bridge courses. Reduce load in the rest of the curriculum.

Please note, that those of you that **did not provide proof** of basic german skills:

- This obligation is automatically lifted after you complete the **first module at TUM**.



Curriculum Structure

Mandatory and Elective Modules

Listed on our [website](#)

TUM Online:

→ Master's Programs

→ Data Engineering and Analytics

→ Compulsory-, Elective-, ... Modules

→ FPSO 2018

During the Degree Program

The master's degree program in Data Engineering and Analytics broadens and deepens existing knowledge. It also offers the possibility of individual specialization in one or more specialist areas. The qualification profile of the master's program in Data Engineering and Analytics is made up of the individual modules. In the course of study, you must contribute a total of 120 credits. These consist of:

- Required Modules (31 ECTS)
- Elective Modules (53 ECTS)
- Support Elective Modules (6 ECTS)
- Final Thesis (30 ECTS)

Explanations can be found below.

Required Modules

The following required modules must be completed in the Data Engineering and Analytics Master's program:

[IN2326](#) Foundations in Data Engineering (winter semester)

[MA4800](#) Foundations in Data Analysis (summer semester)

[IN2107](#) Advanced Seminar Course

[IN2106](#) Advanced Practical Course

Elective Modules

A total of at least 53 ECTS must be completed from the Elective Modules in the areas listed below and the Elective Modules in Informatics. You must meet the following requirements:

You have to take modules of at total of at least 15 ECTS from the three areas "Data Engineering", "Data Analytics" and "Data Analysis", with at least one module from each of the three areas.

You have to take modules of at total of at least 25 ECTS from the two areas "Advanced Topics in Data Engineering" and "Special Topics in Analytics", and have to take at least one of the modules IN2169 "Research Work under Guidance" or IN2328 "Application Project".

The list of all modules can be found in TUMonline in your [study plan](#).



Curriculum Structure

Overview

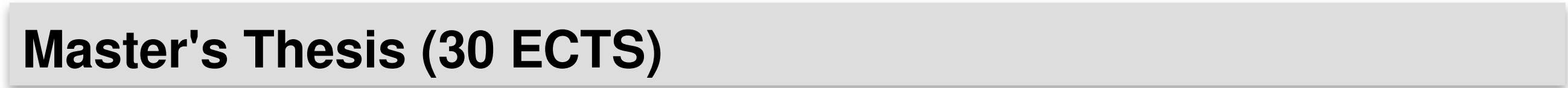
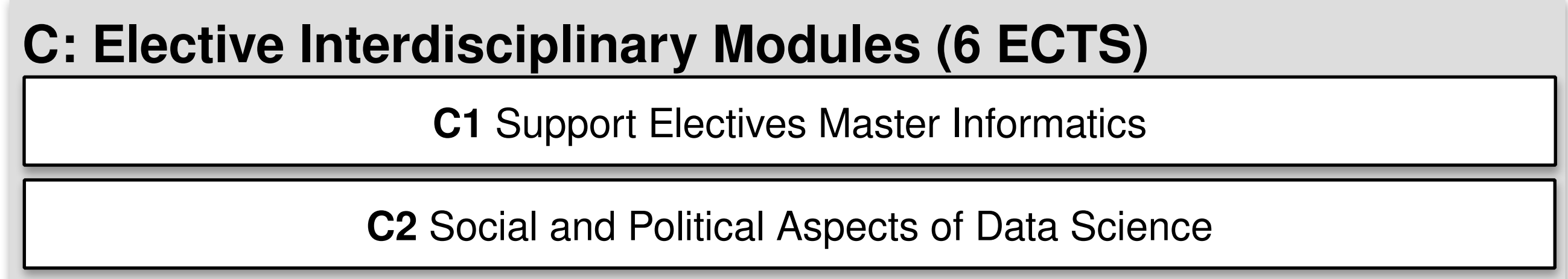
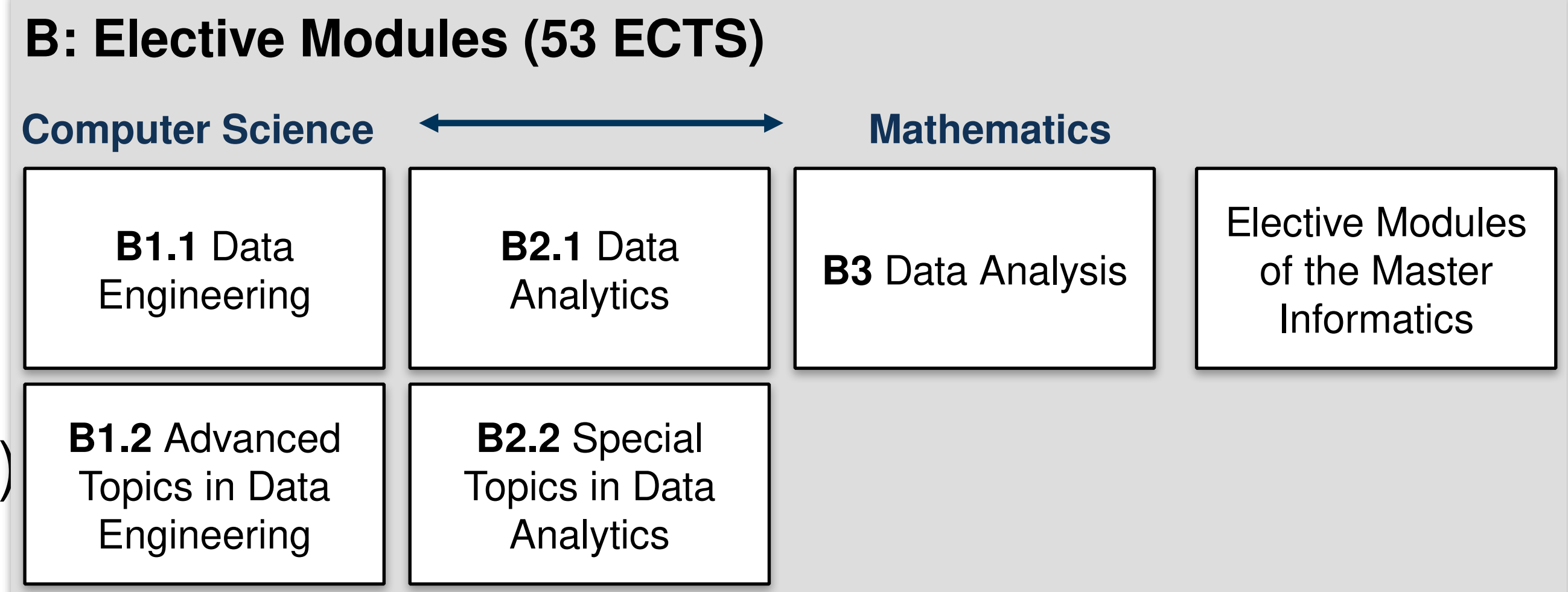
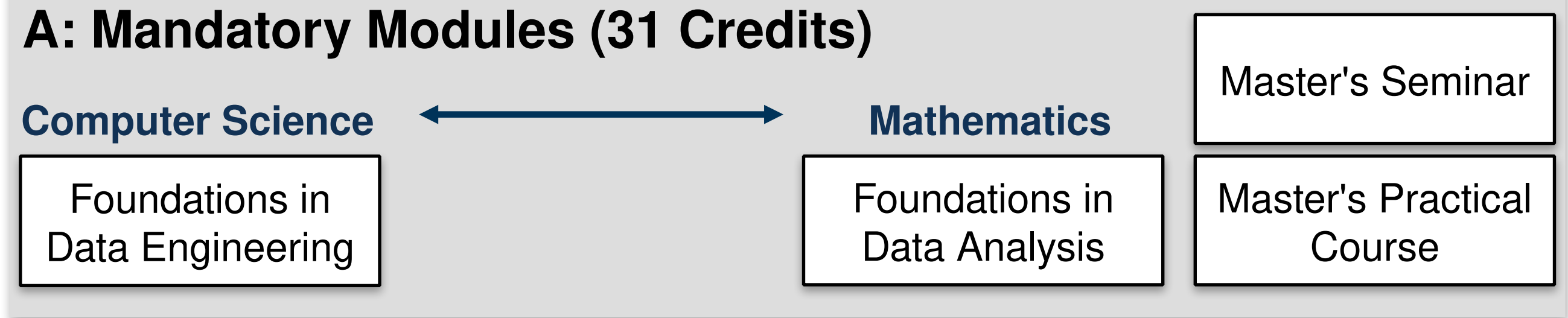
A: Modules are mandatory

B: Catalog of elective modules from different areas

- Choose modules (with small constraints)
- Columns have a different focus

C: Interdisciplinary modules

Master's Thesis





Curriculum Structure

Mandatory Modules

- Foundations in Data Engineering (IN2326, 8 ECTS)
 - Foundations in Data Analysis (MA4800, 8 ECTS)
 - Master's Seminar (IN 2107, 5 ECTS)
 - Master's Practical Course (IN2106, 10 ECTS)
-
- Listed in the FPSO in: *A Mandatory Modules*

A: Mandatory Modules (31 Credits)

Computer Science

Foundations in Data Engineering



Mathematics

Foundations in Data Analysis

Master's Seminar

Master's Practical Course

B: Elective Modules (53 ECTS)

Computer Science

B1.1 Data Engineering

B2.1 Data Analytics

B3 Data Analysis

Elective Modules of the Master Informatics

B1.2 Advanced Topics in Data Engineering

B2.2 Special Topics in Data Analytics

C: Elective Interdisciplinary Modules (6 ECTS)

C1 Support Electives Master Informatics

C2 Social and Political Aspects of Data Science

Master's Thesis (30 ECTS)



Curriculum Structure

Elective Modules - Electives 1

- Earn at least *15 ECTS* in core groups
- Complete at least one module in each group

Listed in the FPSO in: *B Elective Modules*

A: Mandatory Modules (31 Credits)

Computer Science

Foundations in Data Engineering

Mathematics

Foundations in Data Analysis

Master's Seminar

Master's Practical Course

B: Elective Modules (53 ECTS)

Computer Science

B1.1 Data Engineering

B1.2 Advanced Topics in Data Engineering

B2.1 Data Analytics

B2.2 Special Topics in Data Analytics

Mathematics

B3 Data Analysis

Elective Modules of the Master Informatics

C: Elective Interdisciplinary Modules (6 ECTS)

C1 Support Electives Master Informatics

C2 Social and Political Aspects of Data Science

Master's Thesis (30 ECTS)

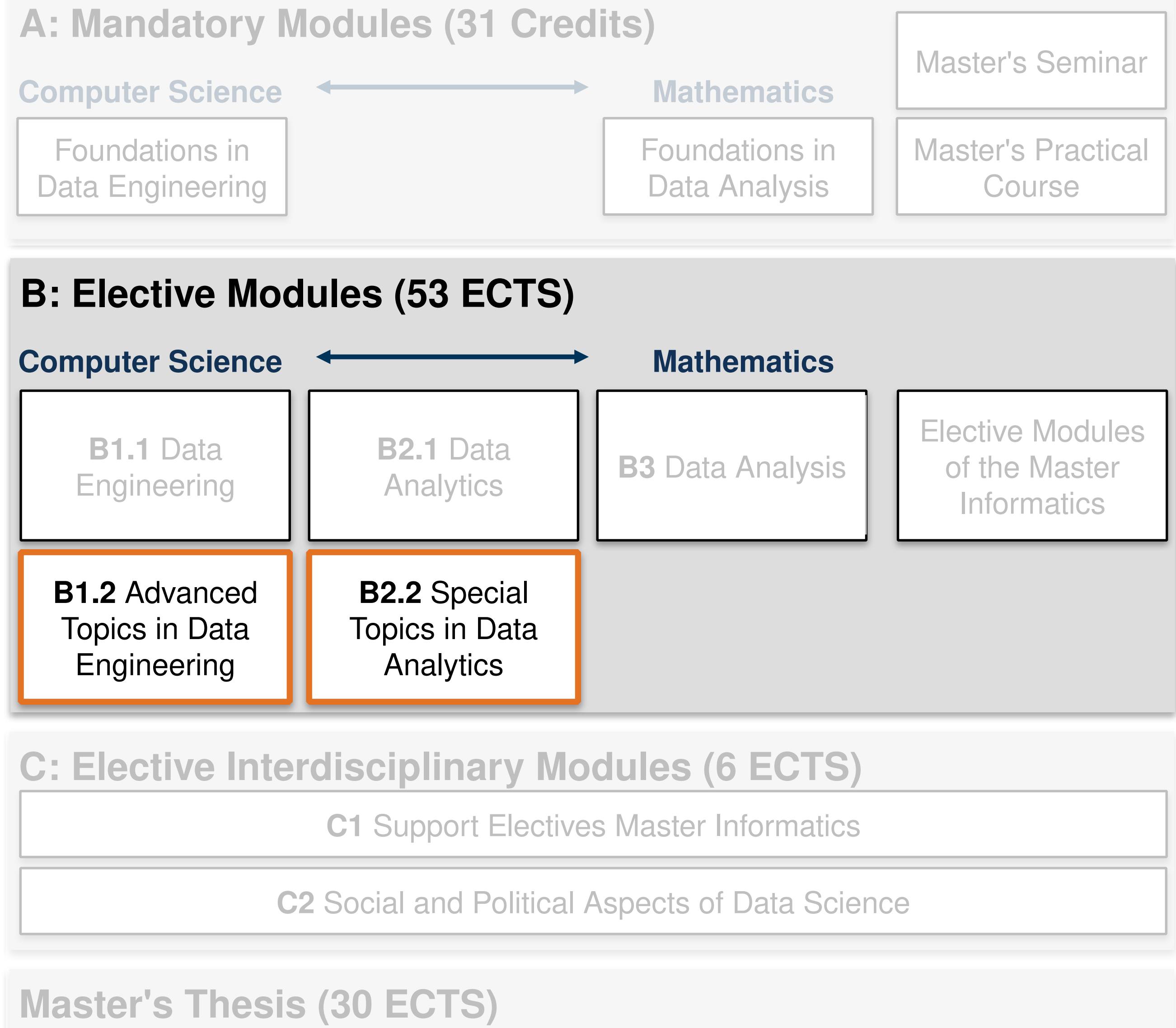


Curriculum Structure

Elective Modules - Electives 2

- Earn at least *25 ECTS* in advanced/special groups
- Includes *Guided Research* or *Application Project*
- Complete at least *Guided Research* or *Application Project*

Listed in the FPSO in: *B Elective Modules*





Curriculum Structure

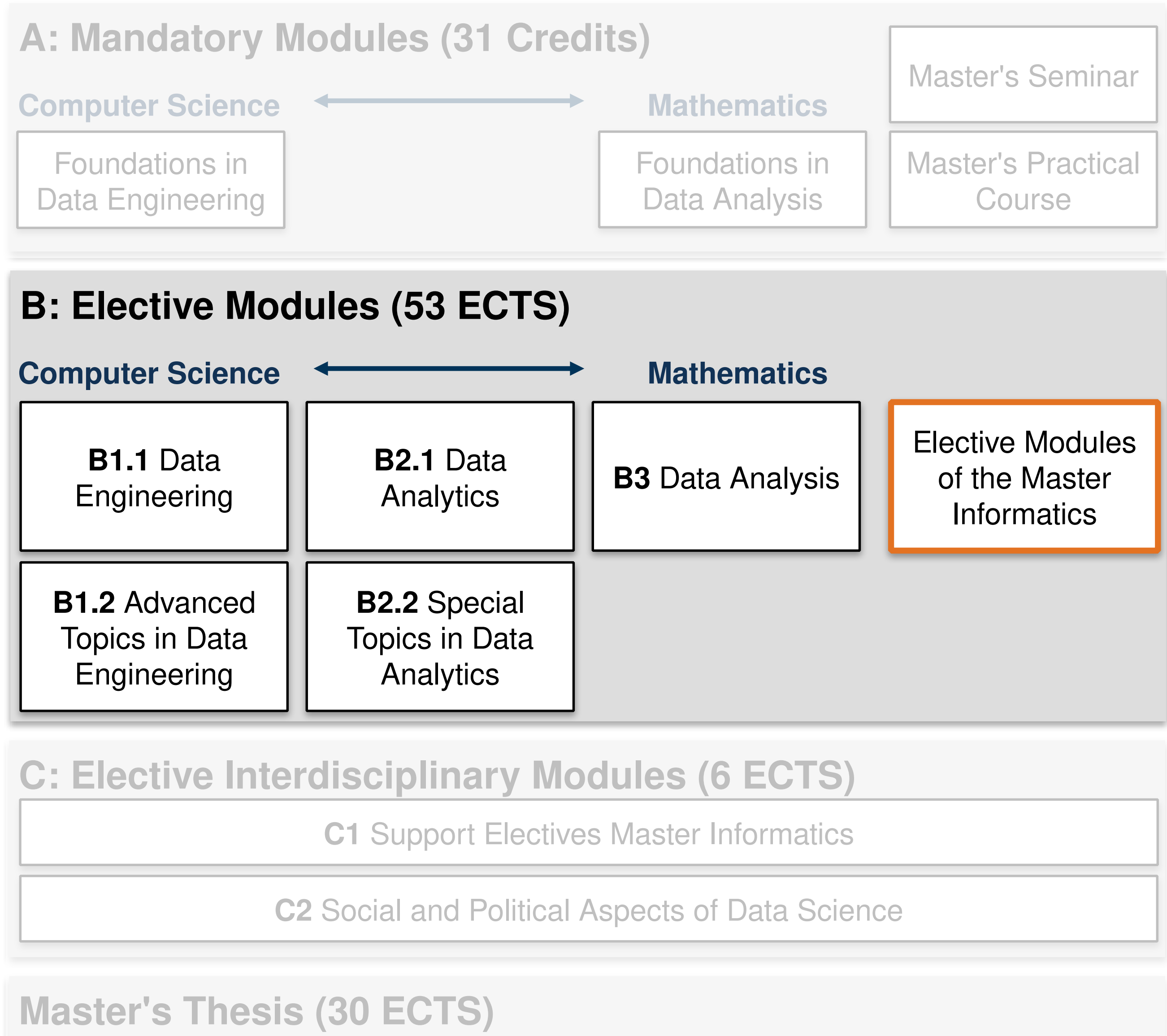
Elective Modules - Electives 3

For the remaining 13 ECTS of *B: Elective Modules*

- Additional modules from B1.1, B1.2, B2.1, B2.2, B3
- Elective modules of the Master Informatics

→ **Sum** of taken modules from:
 B1.1, B1.2, B2.1, B2.2, B3, Elective modules
 of the Master Informatics \geq **53 ECTS**

Listed in the FPSO in: *B Elective Modules*





Curriculum Structure

Electives Interdisciplinary

Modules

Earn at least 6 Credits:

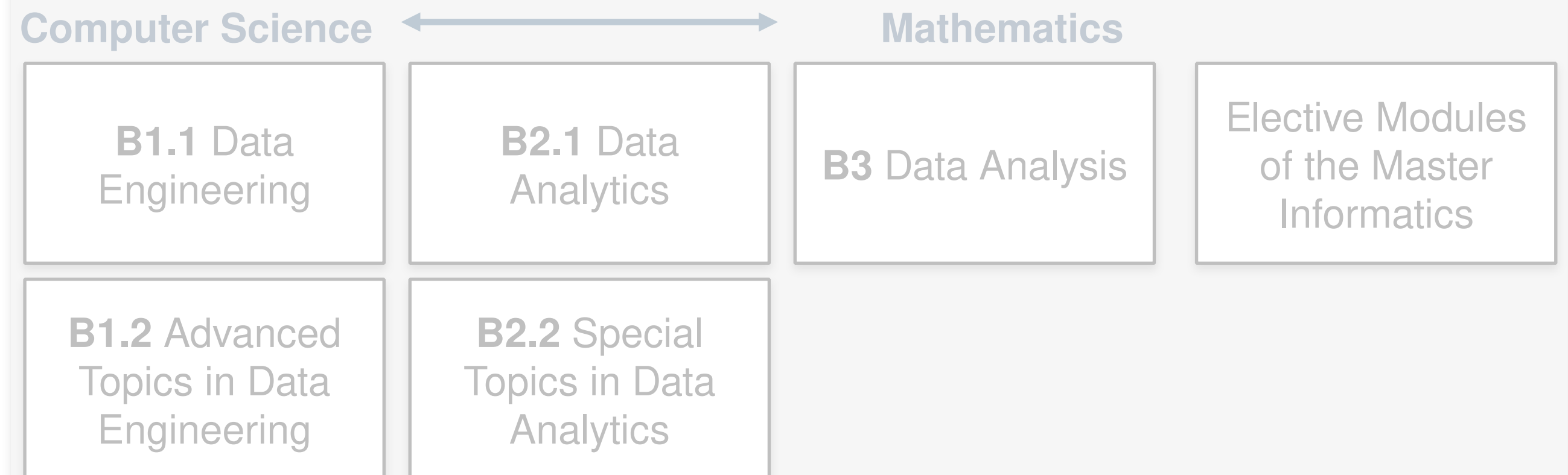
- **3 ECTS** Support Electives Master Informatics
 - Module catalogue of Master Informatics or
 - Language courses or
 - Courses from the Carl-von-Linde-Academy
- **3 ECTS** Social and Political Aspects of Data Science

Listed in the FPSO in: *C Interdisciplinary Elective Modules*

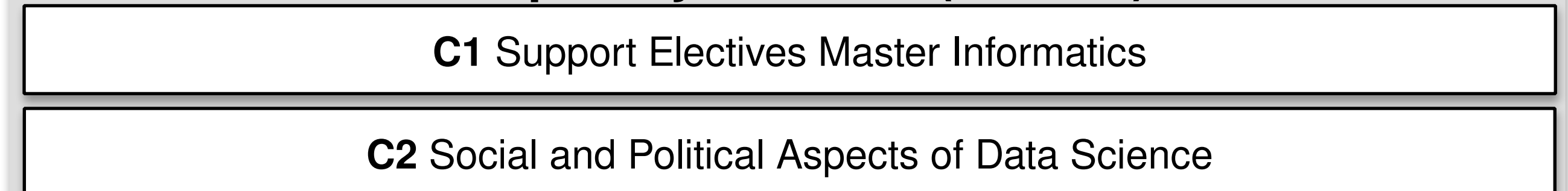
A: Mandatory Modules (31 Credits)



B: Elective Modules (53 ECTS)



C: Elective Interdisciplinary Modules (6 ECTS)



Master's Thesis (30 ECTS)



Curriculum Structure

Module Catalog - TUMOnline

<https://campus.tum.de/tumonline/wbstpcs.showSpoTree?pStStudiumNr=&pSJNr=1615&pStpStpNr=4733&pStartSemester=>

TUM Campus-Management-System TUMonline
Technische Universität München

Curriculum / 16 048 Data Engineering and Analytics (20181, Masterstudium, current)
Academic year 2022/23

Display ▾ Node filter (All) ▾ Academic year (2022/23) ▾

Node filter-Name

- [20181] Data Engineering and Analytics
 - Master's Thesis
 - Required Modules Data Engineering and Analytics
 - Advanced Practical Course
 - Advanced Seminar Course
 - Elective Modules
 - Data Engineering
 - Data Analytics
 - Data Analysis
 - Advanced Topics in Data Engineering
 - Special Topics in Data Analytics
 - Elective Modules Informatics
 - Further Elective Modules
 - Support Electives

A: Mandatory Modules (31 Credits)

Computer Science

Mathematics

Foundations in Data Engineering

Foundations in Data Analysis

Master's Seminar

Master's Practical Course

B: Elective Modules (53 ECTS)

Computer Science

Mathematics

B1.1 Data Engineering

B2.1 Data Analytics

B3 Data Analysis

Elective Modules of the Master Informatics

B1.2 Advanced Topics in Data Engineering

B2.2 Special Topics in Data Analytics

C: Elective Interdisciplinary Modules (6 ECTS)

C1 Support Electives Master Informatics

C2 Social and Political Aspects of Data Science

Master's Thesis (30 ECTS)



Credit Requirements over Time

- Until the end of the 2nd semester: at least one module
 - 3rd semester ≥ 30 ECTS Credits
 - 4th semester ≥ 60 ECTS Credits
 - 5th semester ≥ 90 ECTS Credits
 - 6th semester 120 ECTS Credits



Tips from Guidance Counselors

<https://www.cit.tum.de/en/cit/studies/students/advising/informatics/tips-for-successful-studies/>

Please talk to the academic advisors for

- Advice on your study plan
- Internships or thesis abroad
- Examination Regulations
- Learning Methods
- Any issues you may have here at TUM

Contact: academic-advising-in.asa@xcit.tum.de



See you soon!