Welcome Meeting for Master's Students

Faculty of Computer Science and Mathematics
Monday, 25 April 2022
Introduction

• Prof. Dr. Tobias Kaiser, Dean
• Prof. Dr. Ignaz Rutter, Vice Dean
• Prof. Dr. Matthias Brandl, Dean of Studies
• Dr. Robert Offinger, Faculty Manager
• Wolfgang Mages, International Coordinator
• International Student Assistants
• FSinfo Student Committee
Agenda

• German Language Skills
• Study and Examination Regulations:
  – M.Sc. Computer Science
  – M.Sc. Artificial Intelligence Engineering
  – M.Sc. Computational Mathematics
• Course Enrolment and Examinations
• New Professors
• Support for International Master‘s Students
• Questions and Answers
Basic German-Language Skills

If you did not have proof of German-language skills when you enrolled in the programme, you are required to complete a compulsory German course during the first year of study at level A1 CEFR or higher (proof of skills necessary at the end of the first year of study).
• You can put together your individual curriculum

• All offered modules and courses (but compulsory seminar and presentation of master’s thesis) are assigned
  – to one respective focus area or
  – to the “General Area”

• The focus area in which you accumulate the most credits will be your specialization (cannot be the “General Area”)

• Language restrictions: some focus areas have a greater variety of (English-taught) modules than others, please keep that in mind when choosing your specialisation. However, you may study individual modules from all areas as ‘freely selectable courses’ in accordance with the rules specified below

• If you improve your German proficiency to an extent that you can follow the courses taught in German, you will have the full range of choices in this degree programme
About the Programme: Focus Areas

Five Focus Areas:

1. Information and Communication Systems
2. IT Security and Reliability
3. Intelligent Technical Systems
4. Programming and Software Systems
5. Algorithmics and Mathematical Modeling

Acceptability of courses for credit transfers:
https://www.fim.uni-passau.de/en/study/acceptability-for-credit-transfers
To obtain the degree, you need to accumulate **120 credits** as follows:

- **30 credits for the thesis**, supervised by a professor (typically in the field of your specialisation, usually at the end of your studies)
- A **minimum of 40 credits from your specialisation** modules (in the chosen focus area)
- A **minimum of 30 credits from modules outside your specialisation** (from other focus areas or from “General Area”)
- One **seminar** (5 credits, typically in the field of your specialisation)
- For the remaining 15 credits, you are **completely free in your choice** of credits (from your specialisation or from any other focus area – including the “General Area” - but only within the programme)
- German-language skills at level A1 (minimum)
Compulsory Modules

• Seminars
  – Aim: specialisation on a research topic and preparation for master’s thesis
  – Not in the 1st or 2nd semester, recommended in the 3rd semester or later
  – Presentation of seminars offered in the next semester at an event toward the end of every semester (Stud.IP event 6030 in each corresponding semester)
  – Limited number of participants
  – Max. 3 attempts: 3rd fail ultimately irrecoverable (exmatriculation)

• Master’s Thesis & Presentation
  – Usually at the end of your studies (at least 40 ECTS required, recommended at least 60-70 ECTS)
  – Typically in the field of your specialisation
  – Look for potential topics on the pages of the chairs and professorships: www.fim.uni-passau.de/en/study/theses
  – Maximum duration of 6 months for the completion of the thesis (from the day of the supervisor’s confirmation of acceptance until the due date)
  – Max. 2 attempts: 2nd fail ultimately irrecoverable (exmatriculation)
### Sample Curriculum 1, M.Sc. Computer Science

**Specialisation:** focus area Information and Communication Systems

- Implementation of Database Systems (7 credits)
- Text Mining Project (8 credits)
- Web of Things and Services (5 credits)
- Data Science Lab (6 credits)
- Multimedia Databases (7 credits)
- Programming Applications for Mobile Interaction (7 credits)

**Total: 40 (≥40) credits**

**Outside your specialisation:**

**Algorithmics and Mathematical Modelling**
- Computational Logic (7 credits)
- Computer Algebra (9 credits)

**Intelligent Technical Systems**
- Control and Robotics (7 credits)

**IT Security and Reliability**
- Cloud Security (6 credits)
- Dependable Distributed Systems (6 credits)
- Advanced IT Security (6 credits)

**General Area**
- Internship (4 credits)

**Total: 45 (≥30) credits**

**Master seminar:** 5 credits  
**Thesis:** 30 credits

**Overall Total: 120 (≥120) credits**

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25 April 2022

Faculty of Computer Science and Mathematics
### Sample Curriculum 2, M.Sc. Computer Science

**Specialisation: focus area IT Security and Reliability**

- System Security (5 credits)
- Security Insider Lab I (12 credits)
- Wireless Security (5 credits)
- Cloud Security (6 credits)
- Dependable Distributed Systems (6 credits)
- Advanced Security Engineering Lab (12 credits)
- Advanced IT Security (6 credits)

**Outside your specialisation:**

**Information and Communication Systems**

- Web of Things and Services (5 credits)
- Foundations of Energy Systems (6 credits)
- Network Science (5 credits)
- Advanced Topics in Data Science (5 credits)
- Multimedia Databases (7 credits)
- Safety and Security of Critical Infrastructures (6 credits)

**Total:** 52 (≥40) credits

**Total:** 34 (≥30) credits

**Master seminar:** 5 credits

**Thesis:** 30 credits

**Overall Total:** 121 (≥120) credits
Artificial Intelligence Engineering: Focus Areas

Focus Areas:

1. Algorithmic Engineering und Mathematical Modelling (AEMM)
2. Artificial Intelligence Methods (AIM)
3. Artificial Intelligence Systems Engineering (AISE)
4. Artificial Intelligence Applications (AIA)
5. Cross-Cutting Concerns (CCC)
6. Research Seminars (RS)
To obtain the degree, you need to accumulate **120 credits** as follows:

- **30 credits for the thesis**, supervised by a professor (usually at the end of your studies)
- **5 credits for the core module “Introduction to AI Engineering”**
- A minimum of 70 credits from all focus areas except RS
- A minimum of 55 credits from the focus areas AEMM, AIM, AISE, AIA and in doing so
  - A minimum of 10 credits from AIM
  - A minimum of 10 credits from AISE
  - A minimum of 10 credits from AIA
  - A minimum of 5 credits from CCC
- A maximum of 10 credits from the focus area RS
- One **compulsory seminar** (typically in the field of your specialisation and not in the first semester)
- **German-language** skills at level A1 (minimum)
AI Engineering: Degree Requirements

Degree Structure M.Sc. Artificial Intelligence Engineering

Core Modules
- Master's Thesis: 27 ECTS
- Presentation of Master's Thesis: 5 ECTS
- Compulsory Seminar: 5 ECTS
- 20+1UE Introduction to AI Engineering: 5 ECTS

Compulsory Elective Modules
1) Module Group: Algorithmic Engineering and Mathematical Modelling
   - Comp. Elective: 5-9 ECTS

2) Module Group: Artificial Intelligence Methods
   - Comp. Elective: 5-9 ECTS

3) Module Group: Artificial Intelligence Systems Engineering
   - Comp. Elective: 5-9 ECTS

4) Module Group: Artificial Intelligence Applications
   - Comp. Elective: 5-9 ECTS

5) Module Group: Cross-Cutting Concerns
   - Comp. Elective: 5-9 ECTS

6) Module Group: Research Seminars
   - Comp. Elective: 5 ECTS
   - Comp. Elective: 5 ECTS

- at least 10 ECTS from Module Group 2
- at least 10 ECTS from Module Group 3
- at least 10 ECTS from Module Group 4
- at least 5 ECTS from Module Group 5
- max. 10 ECTS from Module Group 6

- at least 55 ECTS from Module Groups 1+2+3+4

- at least 70 ECTS from Module Groups 1+2+3+4+5

- at least 120 ECTS
## Sample Curriculum 1, M.Sc. AI Engineering

### AEMM
- Parameterized Algorithms (5 credits)
- Partial Differential Equations (7 credits)
- Mathematical Logic (9 credits)

**Total (AEMM): 21 credits**

### AIM
- Learning Theory (9 credits)
- Advanced Imaging (6 credits)

**Total (AIM): 15 (≥10) credits**

### AISE
- Scaling Database Systems (6 credits)
- Programming Applications for Mobile Interaction (7 credits)

**Total (AISE): 13 (≥10) credits**

### AIA
- Advanced Topics in Management Science: Planning of Complex Interacting Systems (5 credits)
- Multimedia Databases (7 credits)

**Total (AIA): 12 (≥10) credits**

### CCC
- IT Security Law (5 credits)
- Organizational and Competitive Strategy (5 credits)

**Total (CCC): 10 (≥5) credits**

### RS
- Research Seminar I (5 credits)
- Research Seminar II (5 credits)

**Total (RS): 10 (≤10) credits**

In total (AEMM, AIM, AISE, AIA): 61 (≥55) credits

In total (AEMM, AIM, AISE, AIA, CCC): 71 (≥70) credits

**Master seminar: 5 credits**

**Thesis: 30 credits**

**Introduction to AIE: 5 credits**

**Overall Total: 121 (≥120) credits**
### Sample Curriculum 2, M.Sc. AI Engineering

<table>
<thead>
<tr>
<th>AEMM</th>
<th>AISE</th>
<th>CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computational Logic</td>
<td>Advanced IT Security</td>
<td>Privacy-Preservation</td>
</tr>
<tr>
<td>(7 credits)</td>
<td>(6 credits)</td>
<td>Technologies in Information Systems</td>
</tr>
<tr>
<td>Complex Dynamical</td>
<td>Search-Based Software Engineering</td>
<td>(5 credits)</td>
</tr>
<tr>
<td>Networks (5 credits)</td>
<td>(5 credits)</td>
<td></td>
</tr>
<tr>
<td>Randomised Algorithms</td>
<td>Scalling Database Systems</td>
<td>Strategy for High-Tech</td>
</tr>
<tr>
<td>(7 credits)</td>
<td>(6 credits)</td>
<td>Startups (5 credits)</td>
</tr>
</tbody>
</table>

**Total (AEMM): 19 credits**

<table>
<thead>
<tr>
<th>AIM</th>
<th>AIA</th>
<th>CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Science Lab</td>
<td>Energy Informatics I</td>
<td>Privacy-Preservation</td>
</tr>
<tr>
<td>(6 credits)</td>
<td>(6 credits)</td>
<td>Technologies in Information Systems</td>
</tr>
<tr>
<td>Advanced Topics in</td>
<td>Computational Statistics –</td>
<td>(5 credits)</td>
</tr>
<tr>
<td>Data Science</td>
<td>Regression in R (3 credits)</td>
<td></td>
</tr>
<tr>
<td>(5 credits)</td>
<td>Econometric Methods (5 credits)</td>
<td></td>
</tr>
<tr>
<td>Applied Artificial</td>
<td></td>
<td></td>
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<tr>
<td>Intelligence Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6 credits)</td>
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</tr>
</tbody>
</table>

**Total (AIM): 17 (≥10) credits**

<table>
<thead>
<tr>
<th>AIA</th>
<th></th>
<th>CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced IT Security</td>
<td></td>
<td>Privacy-Preservation</td>
</tr>
<tr>
<td>(6 credits)</td>
<td></td>
<td>Technologies in Information Systems</td>
</tr>
<tr>
<td>Search-Based Software</td>
<td></td>
<td>(5 credits)</td>
</tr>
<tr>
<td>Engineering (5 credits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scalling Database</td>
<td></td>
<td>Strategy for High-Tech</td>
</tr>
<tr>
<td>Systems (6 credits)</td>
<td></td>
<td>Startups (5 credits)</td>
</tr>
</tbody>
</table>

**Total (AIA): 17 (≥10) credits**

<table>
<thead>
<tr>
<th>CCC</th>
<th></th>
<th>AISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privacy-Preservation</td>
<td></td>
<td>Advanced IT Security</td>
</tr>
<tr>
<td>Technologies in</td>
<td></td>
<td>(6 credits)</td>
</tr>
<tr>
<td>Information Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5 credits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy for High-Tech</td>
<td></td>
<td>Search-Based Software</td>
</tr>
<tr>
<td>Startups (5 credits)</td>
<td></td>
<td>Engineering (5 credits)</td>
</tr>
</tbody>
</table>

**Total (CCC): 10 (≥5) credits**

<table>
<thead>
<tr>
<th>RS</th>
<th></th>
<th>AISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Seminar I</td>
<td></td>
<td>Advanced IT Security</td>
</tr>
<tr>
<td>(5 credits)</td>
<td></td>
<td>(6 credits)</td>
</tr>
</tbody>
</table>

**Total (RS): 5 (≤10) credits**

In total (AEMM, AIM, AISE, AIA): 67 (≥55) credits

In total (AEMM, AIM, AISE, AIA, CCC): 77 (≥70) credits

- Master seminar: 5 credits
- Thesis: 30 credits
- Introduction to AIE: 5 credits
- Overall Total: 122 (≥120) credits
Study and Examination Regulations

Master’s Programme Computational Mathematics
Focus Areas:

1. Algebra, Geometry and Cryptography (AGC)
2. Mathematical Logic and Discrete Mathematics (MLDM)
3. Analysis, Numerics and Approximation Theory (ANAT)
4. Dynamical Systems and Optimization (DSO)
5. Stochastics, Statistics (SS)
6. Data Analysis and Data Management and Programming (DADMP)
7. Applications (A)
8. Key Competencies and Language Training (KCLT)
To obtain the degree, you need to accumulate 120 credits as follows:

- **30 credits for the thesis**, supervised by a professor (usually at the end of your studies)
- **A minimum of 50 credits from the focus areas AGC, MLMD, ANAT, DSO, SS** and in doing so
  - A minimum of 15 credits from AGC, MLMD
  - A minimum of 15 credits from ANAT, DSO, SS
- **A minimum of 10 credits from the focus areas DADMP, A**
- **A minimum of 4 credits from the focus area KCLT**
- Two **seminars** (each 5 credits, typically in the field of your specialisation and not in the first semester)
- For the remaining 16 credits, you are **completely free** in your choice of courses
- **German-language** skills at level A1 (minimum)
Computational Mathematics: Degree Requirements

Core Modules
- Master's Thesis: 27 ECTS
- Presentation of Master's Thesis: 3 ECTS
- Mathematics Seminar 1: 5 ECTS
- Mathematics Seminar 2: 5 ECTS

Compulsory Elective Modules
- Module Group: Algebra, Geometry, and Cryptography
  - Comp. Elective: 5-9 ECTS
- Module Group: Mathematics Logic and Discrete Mathematics
  - Comp. Elective: 5-9 ECTS
- Module Group: Analysis, Numerics, and Approximation Theory
  - Comp. Elective: 5-9 ECTS
- Module Group: Dynamical Systems and Optimization
  - Comp. Elective: 5-9 ECTS
- Module Group: Stochastics, Statistics
  - Comp. Elective: 5-9 ECTS
- Module Group: Data Analysis and Data Management and Programming
  - Comp. Elective: 5-9 ECTS
- Module Group: Applications
  - Comp. Elective: 5 ECTS
- Module Group: Key Competencies and Languages
  - Comp. Elective: 1-3 ECTS

Total ECTS:
- 40 ECTS
- at least 15 ECTS from Module Groups 1+2
- at least 15 ECTS from Module Groups 3+4+5
- at least 10 ECTS from Module Groups 6+7
- at least 4 ECTS
- at least 50 ECTS from Module Groups 1+2+3+4+5
- at least 120 ECTS
# Example for an Individual Curriculum

## Sample Curriculum, M.SC. Computational Mathematics

<table>
<thead>
<tr>
<th>AGC, MLMD</th>
<th>DADMP, A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryptanalysis (9 credits)</td>
<td>Visual Analytics (5 credits)</td>
</tr>
<tr>
<td>Cryptography (9 credits)</td>
<td>Network Science (5 credits)</td>
</tr>
<tr>
<td>Mathematical Logic (9 credits)</td>
<td>Advanced Topics in Data Science (5 credits)</td>
</tr>
</tbody>
</table>

Total (AGC, MLMD): 27 (≥15) credits

<table>
<thead>
<tr>
<th>ANAT, DSO, SS</th>
<th>KCLT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Differential Equations (6 credits)</td>
<td>Scientific Methods and Technical Writing (5 credits)</td>
</tr>
<tr>
<td>Operator Theory (9 credits)</td>
<td></td>
</tr>
<tr>
<td>Functional Analysis (9 credits)</td>
<td></td>
</tr>
<tr>
<td>Learning Theory (9 credits)</td>
<td></td>
</tr>
</tbody>
</table>

Total (ANAT, DSO, SS): 33 (≥15) credits

In total (AGC, MLMD, ANAT, DSO, SS): 60 (≥50) credits

<table>
<thead>
<tr>
<th>Master seminar 1: 5 credits</th>
<th>Master seminar 2: 5 credits</th>
</tr>
</thead>
</table>

Thesis: 30 credits

<table>
<thead>
<tr>
<th>Overall Total: 120 (≥120) credits</th>
</tr>
</thead>
</table>

25 April 2022
• Academic progress: requirement to accumulate at least 20 ECTS points after the first semester or 30 ECTS points after the second semester
  ➢ Failure to do so will inevitably lead to exmatriculation

• Plagiarism assessment: declaration of consent with screening of written work (e.g., use of anti-plagiarism software)
  ➢ Zero tolerance for plagiarism (improper citation of sources/authors and origins of copyrighted material/images etc.) or cheating in examinations

Violations will result in course failure or expulsion from the programme!
Course Enrolment and Examinations

Stud.IP

- Sign up only for courses you really intend to take
- Crucial for adequate allocation of resources (suitable lecture halls etc.)
- You should enroll for both lecture (V) and exercise (Ü)

Examinations

- HISQIS examination registration is binding!
- Specific sign-up periods for each faculty, announced each semester by the Examinations Office
- Exceptions in cases of hardship must be reported immediately to the Board of Examiners
New Professors

Prof. Dr. Joscha Prochno  
*Functional Analysis*

Prof. Dr. Alexey Vinel  
*Reliable Distributed Systems*
Faculty of Computer Science and Mathematics

The Faculty
Computer Science

Prof. Dr. Christian Hammer
Software Engineering I

Prof. Dr. Elif Bilge Kavun
Secure Intelligent Systems

Prof. Dr. Florian Lemmerich
Applied Machine Learning

Prof. Dr. Gordon Fraser
Software Engineering II
The Faculty
Computer Science

Prof. Dr. Michael Granitzer
Data Science

Prof. Dr. Joachim Posegga
IT Security

Prof. Dr. Dirk Sudholt
Algorithms for Intelligent Systems

Prof. Dr. Stefanie Scherzinger
Scalable Database Systems
Faculty of Computer Science and Mathematics

The Faculty
Computer Science

Prof. Dr. Hermann de Meer
*Computer Networks & Communication*

Prof. Dr. Matthias Kranz
*Embedded Systems*

Prof. Dr. Stefan Katzenbeissner
*Computer Engineering*

Prof. Dr. Ignaz Rutter
*Theoretical Computer Science*
Prof. Dr. Harald Kosch  
*Distributed Information Systems*

Prof. Dr. Annette Hautli-Janisz  
*Computational Rhetoric and Natural Language Processing*
Faculty of Computer Science and Mathematics

The Faculty
Mathematics

Prof. Dr. Matthias Brandl
Didactics of Mathematics

Prof. Dr. Tomas Sauer
Digital Image Processing

Prof. Dr. Fabian Wirth
Dynamical Systems

Prof. Dr. Tobias Kaiser
Pure Mathematics
Faculty of Computer Science and Mathematics

The Faculty Mathematics

Prof. Dr. Thomas Müller-Gronbach
Stochastics and Its Applications

Prof. Dr. Brigitte Forster-Heinlein
Applied Mathematics

Prof. Dr. Jens Zumbrägel
Cryptography

Prof. Dr. Martin Kreuzer
Symbolic Computation

25 April 2022
The Faculty Mathematics

Prof. Dr. Daniel Rudolf

Mathematical Data Science
Faculty of Computer Science and Mathematics

Stand-In Professors

Prof. Dr. Michael Schönlein
Mathematical Optimisation

Prof. Dr. Markus Endres
Data and Knowledge Engineering

Prof. Dr. John Abbott
Mathematical Logic
Support for International Master’s Students

International Coordinator

Wolfgang Mages
Room 239, IT-Zentrum (International House)
Phone: +49 851 - 509 3066
E-Mail: masters@fim.uni-passau.de

International Student Assistants

Laura, Ashish & Emily
E-Mail: master-help@fim.uni-passau.de
Faculty’s Student Committee (FSinfo)

We support you in your studies, represent you in university committees, collect and provide old exams, and keep you informed about important dates and deadlines.
Please don’t hesitate to approach us in case you face any problems or open questions regarding your studies!😊

Office: IM 244
Phone: 0851/509-3004
Mail: fsinfo@uni-passau.de
Homepage: https://fsinfo.uni-passau.de
Chat: https://fsinfo.uni-passau.de/chat

facebook  twitter  instagram  fsinfopassau
FIM Technical Support

General overview of FIM IT services: https://www.fim.uni-passau.de/en/it-services/

First Steps - A guide to using the FIM IT services for beginners: https://www.fim.uni-passau.de/en/it-services/login-and-account/first-steps/

Create a FIM account to get access to the FIM IT-Services (for instance FIM lab PCs): https://www.fim.uni-passau.de/en/it-services/login-and-account/fim-accounts/
Thank You for Your Attention!
Any Questions?