Welcome Meeting for International Master's Students of Computer Science, MES & Computational Mathematics

Faculty of Computer Science and Mathematics
Monday, 14 October 2019
Introduction

- Prof. Dr. Tobias Kaiser, Vice Dean
- Prof. Dr. Matthias Brandl, Dean of Studies
- Prof. Dr. Matthias Kranz, Chairman of the Board of Examiners
- Dr. Robert Offinger, Faculty Manager
- Wolfgang Mages, International Coordinator
- International Student Assistants
- Luise Haack, iStudi Coach
Agenda

- Re-registration and Enrolment Status
- German Language Skills
- New Study Regulations
- Course Enrolment and Examinations
- M.Sc. Computer Science
- M.Sc. Mobile and Embedded Systems
- M.Sc. Computational Mathematics
- Support for International Master‘s Students
- Professors
• Students are required to re-register at the end of every semester. Notification via Stud.IP only
• Semester contribution of EUR 72.00 is payable when you renew your registration
• Health insurance contributions must be paid regularly, otherwise no re-registration is possible
• Campus cards must be validated at the start of each semester at one of four validation terminals
• Additional information and payment details at https://www.uni-passau.de/en/study/getting-organised/re-registration-and-enrolment-status
Basic German-Language Skills

• If you do not have proof of German-language skills when starting out on 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)
New Study Regulations

• Academic progress: requirement for proof of 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

• Determination of a maximum duration of 6 months for the completion of master‘s theses (from the day of the supervisor‘s confirmation of acceptance until the due date)

• 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 binding
- specific sign-up periods for each faculty
- information event by International Student Assistants before each semester's sign-up period
- exceptions in cases of hardship must be reported immediately to the Board of Examiners
Master’s Programme Computer Science
About the Programme: Structure

• 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 “**General Area**”
• you should **choose one focus area as your specialisation**
• **language restrictions**: not all focus areas do have a sufficient number of English-taught modules to be studied as your specialisation at the moment. However, you may study individual modules from those areas as ‘freely selectable courses’ in accordance with the rules below
• if you improve your German proficiency to an extent that you can follow the courses taught in German, you will have a wider 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

(At the moment, only 1. and 2. can be chosen as specialisation by students studying in English exclusively. 3. and 4. with limitations, depending on future staff development within the Faculty.)
About the Programme: Degree Requirements

To obtain the degree, you need to accumulate **120 credits** as follows:

- **30 credits for the thesis**, supervised by a professor
- **a minimum of 40 credits from your specialisation** modules (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 1\textsuperscript{st} or 2\textsuperscript{nd} semester, recommended in the 3\textsuperscript{rd} semester or later
  – presentation of most seminars offered in the next semester at an event toward the end of each semester
  – limited number of participants
  – max. 3 attempts: 3\textsuperscript{rd} fail ultimately irrecoverable (exmatriculation)

• **Master’s Thesis & Presentation**
  – usually at the end of your studies (at least 40 ECTS required, recommended 80 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/thesis](http://www.fim.uni-passau.de/en/study/thesis)
  – 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: 2\textsuperscript{nd} fail ultimately irrecoverable (exmatriculation)
M.Sc. Computer Science course offerings

Focus Information and Communication Systems:

- Web of Things and Services (Käbisch/Kosch)
- Data Science Lab (Granitzer)
- Visual Analytics (Granitzer)
- Foundations of Energy Systems (de Meer)
- Semantic Technologies (Freitag)
- Database Technologies (Freitag)
- Big Data Management (Endres)
- Innovative Industrial Software (Kranz)
- Industrial Innovation Lab (Kranz)
- Ideation and Prototyping for Industrial Innovation (Kranz)
- Science and Technology Project in Physical Making, Prototyping and Testing (Kranz)
Focus Algorithmics and Mathematical Modeling:
• Algorithmic Graph Theory (Rutter)
• Parametrised Algorithms (Rutter)
• Computational Logic (Kreuzer)
• Computer Algebra (Kreuzer)

Focus Programming and Software Systems:
• Search-Based Software Engineering (Fraser)
• Requirements Engineering (Kuhrmann)
• Empirical Methods for Software Engineering (Kuhrmann)
• Programming Styles (Gambi)
• Advanced Software Product Development (Fraser, Kuhrmann)
Focus IT Security and Reliability:

- Advanced IT Security (Posegga)
- Wireless Security (Posegga)
- Dependable Distributed Systems (Reiser)
- Privacy Enhancing Techniques (Cuellar)
- Hardware-Oriented Security (Katzenbeisser)
- Advanced Security Engineering Lab (Katzenbeisser)
Focus Intelligent Technical Systems:

- Learning Theory (Sauer)
- Deep Learning (Krestel)

Focus General Area:

- Functional Safety (de Meer)
- IT-Sicherheitsrecht aus öffentlich-rechtlicher Perspektive (Hartl)
<table>
<thead>
<tr>
<th>Sample Curriculum 1</th>
<th>Outside your specialisation:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialisation: focus area Information and Communication Systems</strong></td>
<td><strong>Algorithmics and Mathematical Modelling</strong></td>
</tr>
<tr>
<td>• Text Mining (7 credits)</td>
<td>• Logics for Computer Scientists (7 credits)</td>
</tr>
<tr>
<td>• Text Mining Project (8 credits)</td>
<td>• Computer Algebra (9 credits)</td>
</tr>
<tr>
<td>• Web of Things and Services (5 credits)</td>
<td><strong>Intelligent Technical Systems</strong></td>
</tr>
<tr>
<td>• Data Science Lab (6 credits)</td>
<td>• Embedded Systems Programming (7 credits)</td>
</tr>
<tr>
<td>• Multimedia Databases (7 credits)</td>
<td><strong>IT Security and Reliability</strong></td>
</tr>
<tr>
<td>• Programming Applications for Mobile Interaction (7 credits)</td>
<td>• Cloud Security (6 credits)</td>
</tr>
<tr>
<td><strong>Total: 40 (≥40) credits</strong></td>
<td>• Dependable Distributed Systems (6 credits)</td>
</tr>
<tr>
<td></td>
<td>• Advanced IT Security (6 credits)</td>
</tr>
<tr>
<td><strong>General Area</strong></td>
<td><strong>Total: 45 (≥30) credits</strong></td>
</tr>
<tr>
<td>• Internship (4 credits)</td>
<td><strong>Master seminar: 5 credits</strong></td>
</tr>
<tr>
<td><strong>Overall Total: 120 (≥120) credits</strong></td>
<td><strong>Thesis: 30 credits</strong></td>
</tr>
</tbody>
</table>

14 October 2019
### Sample Curriculum 2

**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)

**Total: 52 (≥40) 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)
- Computer Networking and Energy Systems (6 credits)

**Total: 34 (≥30) credits**

**Master seminar: 5 credits**

**Thesis: 30 credits**

**Overall Total: 121 (≥120) credits**

14 October 2019
Master’s Programme Mobile and Embedded Systems
M.Sc. MES Development

• Plans to integrate Mobile and Embedded Systems within the M.Sc. Computer Science degree programme as a newly-designed focus area
• Most likely no more new admissions to the programme from now on
• Existing students encouraged to migrate to M.Sc. Computer Science

Transfer Master MES → Computer Science

• Requests to change degree programmes may be filed year-round
• Change will take effect at the beginning of the subsequent semester
• Requirement: total of 110 ECTS points from relevant computer science coursework (undergraduate studies + modules from Uni Passau)
• International Coordinator provides guidance throughout the process, please make appointments for assistance: masters@fim.uni-passau.de
About the Programme: Structure

• 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 “**General Area**”
• you should **choose one focus area as your specialisation**

Three Focus Areas:

1. Human-Computer Interaction
2. Systems Engineering
3. Data Processing, Signals and Systems
To obtain the degree, you need to accumulate 120 credits as follows:

- **30 credits for the thesis**, supervised by a professor
- A **minimum of 20 credits from your specialisation modules** (chosen focus area)
- A **minimum of 15 credits from another focus area**
- One **seminar** (5 credits, typically in the field of your specialisation)
- For the remaining 50 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)
M.Sc. MES course offerings

Focus Data Processing, Signals and Systems

• Data Science Lab (Granitzer)
• Big Data Management (Endres)
• Deep Learning (Krestel)

Focus Systems Engineering

• Functional Safety (de Meer)
• Web of Things and Services (Käbisch/Kosch)
• Hardware-oriented Security (Katzenbeissner)
• Advanced Security Engineering Lab (Katzenbeissner)
• Requirements Engineering (Kuhrmann)
M.Sc. MES course offerings

**Focus Human-Computer Interaction**
- Empirical Methods for Software Engineering (Kuhrmann)
- Visual Analytics (Granitzer)

**Focus General Area:**
- Foundations of Energy Systems (de Meer)
- Semantic Technologies (Freitag)
- Wireless Security (Posegga)
- Computational Logic (Kreuzer)
- Computer Algebra (Kreuzer)

**Furthermore: Research Internships**
# Example for an Individual Curriculum

<table>
<thead>
<tr>
<th>Sample Curriculum</th>
<th>Freely selectable courses:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialisation: focus area Human-Computer Interaction</strong></td>
<td><strong>Systems Engineering focus</strong></td>
</tr>
<tr>
<td>• Mobile Human-Computer Interaction (8 credits)</td>
<td>• Functional Safety (6 credits)</td>
</tr>
<tr>
<td>• Visual Analytics (5 credits)</td>
<td>• Embedded Systems Programming (7 credits)</td>
</tr>
<tr>
<td>• Semantic Technologies (7 credits)</td>
<td><strong>General Area</strong></td>
</tr>
<tr>
<td>• Research Internship in Human-Computer Interaction (8 credits)</td>
<td>• Scientific Methods and Technical Writing (5 credits)</td>
</tr>
<tr>
<td><strong>Total: 28 (≥20) credits</strong></td>
<td>• Industrial Innovation Lab (15 credits)</td>
</tr>
<tr>
<td></td>
<td>• Markov Chains (7 credits)</td>
</tr>
<tr>
<td><strong>Non-specialisation focus area:</strong></td>
<td><strong>Total: 27 credits</strong></td>
</tr>
<tr>
<td><strong>Data Processing, Signals and Systems focus</strong></td>
<td><strong>Total: 40 credits</strong></td>
</tr>
<tr>
<td>• Advanced Topics in Data Science (5 credits)</td>
<td></td>
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<tr>
<td>• Text Mining (7 credits)</td>
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<td>• Deep Learning (6 credits)</td>
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<tr>
<td><strong>Total: 18 (≥15) credits</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Master seminar: 5 credits</strong></td>
<td><strong>Thesis: 30 credits</strong></td>
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<td><strong>Overall Total: 121 (≥120) credits</strong></td>
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</table>
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 (typically in the field of your specialisation, 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)
  → presentation of seminars offered in the next semester at an event toward the end of the preceding semester
- for the remaining **16 credits**, you are **completely free** in your choice of courses
- **German-language** skills at level A1 (minimum)
Focus Algebra, Geometry and Cryptography
- Computer Algebra (Kreuzer)
- Real Algebra (Kaiser)

Focus Mathematical Logic and Discrete Mathematics
- Algorithmic Graph Theory (Rutter)
- Efficient Algorithms (Rutter)

Focus Analysis, Numerics & Approximation Theory
- Learning Theory (Sauer)
- Computerized Tomography (Diederichs)

Focus Dynamical Systems and Optimization
- Semigroup Theory (Wirth)
Focus Stochastics, Statistics
• Stochastic Analysis (Müller-Gronbach)
• Numerical Methods for Stochastic Differential Equations (Müller-Gronbach)
• Computational Statistics – Statistical Learning in R (Schnurbus)
• Methoden der Ökonometrie I+II (Fritsch; in German)

Focus Data Analysis, Data Management & Programming
• Visual Analytics (Granitzer)
• Data Science Lab (Granitzer)
• Deep Learning (Krestel)
• Big Data Management (Endres)

Focus Applications
• Quantitative Methoden in Finance (Entrop)
• Financial Engineering and Structured Finance (Entrop)
**Sample Curriculum**

### AGC, MLMD
- Cryptanalysis (9 credits)
- Cryptography (9 credits)
- Mathematical Logic (9 credits)

**Total (AGC, MLMD): 27 (≥15) credits**

### ANAT, DSO, SS
- Partial Differential Equations (6 credits)
- Operator Theory (9 credits)
- Mathematical Logic (9 credits)
- Learning Theory (9 credits)

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

### DADMP, A
- Visual Analytics (5 credits)
- Network Science (5 credits)
- Advanced Topics in Data Science (5 credits)

**Total: 15 (≥10) credits**

### KCLT
- Scientific Methods and Technical Writing (5 credits)

**Total: 5 (≥4) credits**

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**Master seminar 1: 5 credits**

**Thesis: 30 credits**

**Master seminar 2: 5 credits**

**Overall Total: 120 (≥120) credits**
International Coordinator

Wolfgang Mages

Room 239, IT-Zentrum (International House)
Phone: 0851/509 3066
E-Mail: masters@fim.uni-passau.de

International Student Assistants

E-Mail: master-help@fim.uni-passau.de
Room 003, IT-Zentrum (International House)

<table>
<thead>
<tr>
<th>Time/Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>Basma</td>
<td></td>
<td></td>
<td>Ashish</td>
<td>Basma</td>
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iStudi Coach

The iStudi Coach is the central contact person for international degree-seeking students.

- Individual advice: Whom to ask?
- Network of partners inside and outside the University
- Career orientation programme: iStudi Pass

Luise Haack  
*iStudi Coach*  
Instr. 41, VW 106  
Tel.:+49 (0)851 509-1173  
Luise.Haack@uni-passau.de  
http://www.uni-passau.de/en/iStudi  
Drop-in hours Wednesday 9-12  
Individual appointments through my profile in Stud.IP
Career Orientation Programme

iStudi Pass

• Attend six training activities from at least five of the following modules to get your certificate:
  – Job seeking and applications
  – Company networking
  – Intercultural skills
  – German language skills
  – Degree success
  – Volunteering

http://www.uni-passau.de/en/iStudiPass

We recommend to complete the programme during two semesters.
iStudi Pass

1. Get your personal pass
   - Register for the pass during the event “Working in Germany – your successful application”
   - Register during the open office hours Wednesdays 9-12, Administration VW 106

2. Select and register for specific events
   - [http://www.uni-passau.de/en/iStudiPass](http://www.uni-passau.de/en/iStudiPass)

3. Document your participation in your pass

4. Receive a certificate to support your application
Career Orientation Programme

Upcoming events

- Presentation of student associations: Oct 16, 2 to 5 p.m. in front of the refectory (module “volunteering”)

- *Working in Germany – Your Successful Application* (introduction): October 22, 6 to 8 p.m. room JUR HS 14 (Stud.IP 63101)

- *Campus meets Company* with introduction into company networking and guided tour (Stud.IP 63105)

Registration for workshops organized by the Centre for Careers and Competencies before October 20, e.g.:

- Your Application for Germany (Stud.IP 63102), Job interview training (Stud.IP 63106)

- Look out for the pink dot for seminars in English!

- [http://www.uni-passau.de/zkk/](http://www.uni-passau.de/zkk/)

14 October 2019 Faculty of Computer Science and Mathematics
Career Orientation Programme

Why to attend?

„Guys, participate in this programme without any considering! It will broaden your horizons in the field of career in Germany. Attend all events even if you have already a stamp in that particular module!“

„It was simply infotainment (information + entertainment)“

„I would definitely recommend this program for every student considering the fact that I managed to get a job offer with no prior work experience.“
ZIM/FIM Technical Support

ZIM IT Support:
- **Rooms 120 and 136 IM**, 8 am – 4 30 pm; for questions concerning your general university account, StudIP, HISQIS and connecting your own devices to the university Wifi network via Eduroam.
- **by Mail**: support@zim.uni-passau.de.

FIM IT Support:
- **Room 014 IM**, 12 am – 2 pm; for questions concerning FIM specific IT services (FIM account, software requests in FIM labs, special environments for projects, bachelor and master theses)
- **by Phone**: In each FIM computer lab there is a phone. Dial 3013 or 3012
- **by Mail**: support@fim.uni-passau.de.
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 Katzenbeisser
Computer Engineering

Prof. Dr. Ignaz Rutter
Theoretical Computer Science
Faculty of Computer Science and Mathematics

The Faculty
Computer Science

Prof. Dr. Harald Kosch
Distributed Information Systems

Prof. Dr. Gordon Fraser
Software Engineering II

JProf. Dr. Hans Reiser
Security in Information Systems
Prof. Dr. Ralf Krestel  
*Intelligent Systems*

Prof. Dr. Markus Endres  
*Digital Libraries and Web Information Systems*

Prof. Dr. Robert Basmadjian  
*Sensorics*

Prof. Dr. Marco Kuhrmann  
*Software Engineering I*
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*
Questions

Thank You for Your Attention!
Any Questions?