Faculty of Computer Science
Institute of Systems Architecture

Master’s Programme in Distributed Systems Engineering

Dr.-Ing. Markus Wutzler
markus.wutzler@tu-dresden.de

Dr.-Ing. Irina Karadschow
infscis.dse@mailbox.tu-dresden.de

Dresden, 2 October 2018
TU Dresden

- Saxony’s largest university
- 6 profiles, 18 faculties, 5 schools
- 33,506 students
  - 9,736 in engineering (i.e. 29%)
  - 7,808 juniors
- 126 degree programmes
- 3,455 employees (state-funded)
- 2,857 employees (third-party-funded)
- 257 million EUR third-party funds

(numbers as of November 2017)
TU Dresden – Region
Introduction to the Master's Programme in Distributed Systems Engineering
Dr.-Ing. Markus Wutzler, Chair of Computer Networks
Dresden, 02 October 2018
Introduction to the Master's Programme in Distributed Systems Engineering
Dr.-Ing. Markus Wutzler, Chair of Computer Networks
Dresden, 02 October 2018

TU Dresden – Main Campus
Faculty of Computer Science

Don’t get lost – find your way!
— navigator.tu-dresden.de
— mapbiquitous.inf.tu-dresden.de
Faculty of Computer Science

(numbers as of November 2017)

- 6 institutes
- 25 chairs, 3 senior professorships
- 300 employees (138 state HR budget)
- 1,700 students
- 200+ research areas
- ~8.3 million EUR third-party funds in 2015
- 241 doctorate students 2016
- 30 doctorate conferrals 2017
Institutes and Chairs

**Applied Computer Science**
- Human Computer Interaction
- Industrial Communications
- Modeling and Simulation
- Technical Information Systems

**Artificial Intelligence**
- Applied Knowledge Representation and Reasoning
- Computational Logic
- Computer Vision
- Scientific Computing for Systems Biology
- Knowledge Representation and Reasoning

**Software and Multimedia Technology**
- Computer Graphics and Visualisation
- Didactics of Computer Science
- Media Design
- Multimedia Technology
- Software Technology

**Computer Engineering**
- Compiler Architecture
- Computer Construction
- Embedded Systems
- Processor Design
- VLSI Design Systems, Diagnostics and Architecture

**Theoretical Computer Science**
- Algebraic and Logical Foundations of Computer Science
- Automata Theory
- Foundations of Programming
- Knowledge-Based Systems

**Systems Architecture**
- Computer Networks
- Databases
- Operating Systems
- Privacy and Data Security
- Systems Engineering
### Faculty of Computer Science – Students

(numbers of winter term 2017/2018)

<table>
<thead>
<tr>
<th>Field</th>
<th>Junior</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer Science</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>183</td>
<td>480</td>
</tr>
<tr>
<td>Diploma</td>
<td>70</td>
<td>388</td>
</tr>
<tr>
<td>Master of Science</td>
<td>26</td>
<td>126</td>
</tr>
<tr>
<td><strong>Media Computer Science</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>125</td>
<td>339</td>
</tr>
<tr>
<td>Master of Science</td>
<td>15</td>
<td>104</td>
</tr>
<tr>
<td><strong>Distributed Systems Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Science</td>
<td>19</td>
<td>59</td>
</tr>
<tr>
<td><strong>Computational Logic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Science</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td><strong>Computational Science and Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Science</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td><strong>Doctorate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ph.D.</td>
<td>10</td>
<td>115</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>468</td>
<td>1655 (+ 47)</td>
</tr>
</tbody>
</table>
Research: Large-Scale Projects

cfAED – Center for Advancing Electronics Dresden
   — 7 chairs from computer science
   — funding: excellence initiative

SFB 912 HAEC – Highly-adaptive Energy Efficient Computing
   — 7 chairs and 1 PD from computer science
   — funding: DFG

ResUbic Lab Dresden – Cyber-Physical Systems
   — 5 chairs from computer science
   — funding: EU (ESF) and SMWK

QuantLA, EPCL, IT4BI, RoSI
   — 4 structured Ph.D. programmes
   — funded by DFG, DAAD and EU
DSE Master’s Degree Programme
DSE Master’s Degree Programme

2-year full-time master’s degree programme focusing on advanced topics of
— distributed (software) systems engineering
with special emphasis on
— secure software for networked and distributed systems
— mobile and ubiquitous computing
Curriculum

master's thesis
- thesis (29 CP)
- defense (1 CP)

compulsory elective modules
- 48 CP out of 14 compulsory elective modules

mandatory internship
- 2 placements (each 6 CP) or
- 1 assignment paper (12 CP)

mandatory lectures
- Systems Engineering (9 CP)
- Ubiquitous Systems (7 CP)
- Transactional & Secure Platforms (9 CP)
- System Design (5 CP)
# Curriculum: Compulsory Elective Subjects

<table>
<thead>
<tr>
<th>#</th>
<th>Module</th>
<th>SWS (L/T/S/P)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSE-14-E1</td>
<td>Advanced Security and Cryptography</td>
<td>2 / 2</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E2</td>
<td>Wireless Sensor Networks</td>
<td>2 / 0 / 2</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E3</td>
<td>Distributed Operating Systems</td>
<td>2 / 1 / 2</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E4</td>
<td>Component-based Software Engineering</td>
<td>2 / 2</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E5</td>
<td>Selected Areas of Internet-based Systems</td>
<td>4 / 4</td>
<td>12</td>
</tr>
<tr>
<td>DSE-14-E6</td>
<td>Concurrent and Distributed Systems</td>
<td>4 / 0 / 0 / 4</td>
<td>12</td>
</tr>
<tr>
<td>DSE-14-E7</td>
<td>Software Fault Tolerance</td>
<td>2 / 2 / 2 / 4</td>
<td>15</td>
</tr>
<tr>
<td>DSE-14-E8</td>
<td>Microkernel-based Operating Systems</td>
<td>2 / 1</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E9</td>
<td>Real-Time Systems</td>
<td>2 / 1</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E10</td>
<td>Application Development for M&amp;U Computing</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>DSE-14-E11</td>
<td>Principles of Dependable Systems</td>
<td>2 / 2</td>
<td>9</td>
</tr>
<tr>
<td>DSE-14-E12</td>
<td>Foundations of Computational Logic</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>DSE-14-E13</td>
<td>Advanced Topics in Systems Architecture</td>
<td>2 / 0</td>
<td>3</td>
</tr>
<tr>
<td>DSE-14-E14</td>
<td>Advanced Topics in Distributed Systems</td>
<td>2 / 2</td>
<td>6</td>
</tr>
</tbody>
</table>

your choice achieve 48 CP
### Curriculum: Intended Schedule

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>48</td>
<td>30</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Curriculum: Let’s Start!

All mandatory lectures are offered this semester!

DSE-M1
- Systems Engineering I
  Prof. Fetzer
- Systems Engineering II
  Prof. Fetzer

DSE-M2
- Mobile Communication and Mobile Computing
  Prof. Schill, Dr. Springer
- Distributed Systems
  Dr. Springer

DSE-M3
- Security and Cryptography I
  Prof. Strufe, Dr. Köpsell
- Transactional Information Systems
  Prof. Lehner, Dr. Thiele

DSE-M4
- Design-Patterns and Frameworks
  Prof. Aßmann, Dr. Götz
## Your Timetable for this Semester

<table>
<thead>
<tr>
<th>Double Period (DS)</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Tutorial Distributed Systems APB/E023</td>
<td></td>
<td>Lecture Security and Cryptography I APB/E023</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lecture Transactional Information Systems APB/E010</td>
<td>Tutorial Transactional Information Systems APB/E001</td>
<td>Lecture Mobile Communication and Mobile Computing APB/E023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Lecture Systems Engineering II APB/E007</td>
<td>Lecture Design Patterns and Frameworks APB/E023</td>
<td>Tutorial Design Patterns and Frameworks WIL/C129</td>
<td>Lecture Distributed Systems APB/E023</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
General Timetable

Winter Semester (winter term)
— October till January
— Exams (written) in February
— Exams (orally) mainly in February / March

Summer Semester (summer term)
— April till July
— Exams (written) in August
— Exams (orally) mainly in August / September

Lectures, Seminars, Placements, etc. take place
Monday through Friday
(officially also on Saturday)

<table>
<thead>
<tr>
<th>DS</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>07:30 (am)</td>
<td>09:00 (am)</td>
</tr>
<tr>
<td>2</td>
<td>09:20 (am)</td>
<td>10:50 (am)</td>
</tr>
<tr>
<td>3</td>
<td>11:10 (am)</td>
<td>12:40 (pm)</td>
</tr>
<tr>
<td>4</td>
<td>13:00 (01:00 pm)</td>
<td>14:30 (02:30 pm)</td>
</tr>
<tr>
<td>5</td>
<td>14:50 (02:50 pm)</td>
<td>16:20 (04:20 pm)</td>
</tr>
<tr>
<td>6</td>
<td>16:40 (04:40 pm)</td>
<td>18:10 (06:10 pm)</td>
</tr>
<tr>
<td>7</td>
<td>18:30 (06:30 pm)</td>
<td>20:00 (08:00 pm)</td>
</tr>
</tbody>
</table>

Pay attention to holidays, et cetera!

https://www.tu-dresden.de/studium/im-studium/studienorganisation/studienjahresablauf
Terminology: Semesterwochenstunde (SWS)

SWS  Semesterwochenstunde  (Semester Weekly Hour)

1 SWS equals to 1 weekly 45-minute session for 14 weeks (additional 45 minutes of weekly outwork)

usually given for lectures, tutorials, [seminars,] and placements (L/T/[S]/P or German: V/Ü/[S]/P)

e.g.: Systems Engineering I – 2/2/- or 2/2/0

weekly 90-minute lecture,
weekly 90-minute tutorial,
no placement

Slots are **always 90 minutes** (so, double periods)!

Uneven SWS mean fortnightly sessions. Pay attention to the week numbers (even/uneven).

8 October 2018 is in an uneven week (41st week of the year).
Exams
Enrolment

Most of the offered lectures, tutorials and placements require mandatory enrolment in the corresponding exams.

— Please consult SCIS for enrolments.

Some offered lectures, tutorials and placements require mandatory enrolment already to participate.

— Please check the corresponding lecturer’s website for details.
— A common tool for lecture / seminar / etc. enrolment is jExam: www.jexam.de
Service Centre for International Students

Examination Office for DSE students
— registration to examinations
— administration of exam results
— announces the grades
— issues transcripts of records and confirmation documents

Room: APB 2018
Hours: Tuesday & Wednesday, 9:00-12:00
E-Mail: infscis.dse@mailbox.tu-dresden.de
Web: https://www.inf.tu-dresden.de/index.php?node_id=2728&ln=en

Always bring ID and matriculation certificate! Student ID alone is insufficient.
Exams

Taken either as written or oral exam. *Refer to module description or ask lecturer!*

register **in person** at SCIS
- during the registration period (written exam)
- latest two weeks prior to exam (oral exam)

for oral exams:
- ask examiner for available appointments
- go to SCIS and register for the exam
- present SCIS paper-work to examiner and make the actual exam appointment

cancellation is possible up until
- 3 days **before** written examinations
- 2 weeks **before** oral examinations

after cancellation deadline, you must present a sickness certificate to the SCIS issued on the day of examination or before stating you were unable to take the exam
Exams: What happens if you fail?

Keep calm!

you may repeat a failed exam twice
  — first repetition within one year
  — second repetition at the next possible date
  — only after three failed attempts you will drop out

in case of a second repetition: consult the SCIS immediately!

you may present a sickness certificate if you were sick during an exam, nullifying the failed attempt (needs to be hand-in within three days after the exam)

Careful, you will automatically receive a non-passing grade (5.0) in case of
  — failure to register for repetition in due time
  — no-show without sickness certificate or very good reason (flood, tornado, earthquake, …)
Beware!

Don’t procrastinate!
— Plan your study! The first and last semester are predefined, the others are up to you! Use the first term to carefully read the study regulations and choose your modules.
— Contact the Academic Advisory Service better sooner than later.
— Enrol for exams on time. Check the SCIS website for respective announcements.
— Take your exams on time. For instance, take DSE-M1 this winter term, as it is scheduled like this.
— Consult the SCIS in case of a second failed attempt immediately!
— Do not start to write your master’s thesis too late!
Academic Advisory Services & Help

Dr.-Ing. Markus Wutzler
Chair of Computer Networks
Academic Advisor for DSE
Room APB 3081
markus.wutzler@tu-dresden.de
+49-351-463-43569

Office Hours:
— Monday, 9-11 am, by appointment

In any case: write an e-mail first!

Dr.-Ing. Irina Karadschow
Service Centre for International Students
Room APB 2018
infscis.dse@mailbox.tu-dresden.de
+49-351-463-39240

Office Hours:
— Tuesday, 9-12 am
— Wednesday, 9-12 am

Check SCIS website regularly!
Important Contacts

Prof. Christof Fetzer
Chair of Systems Engineering
Dean of DSE Programme
— Room APB 3104
— christof.fetzer@tu-dresden.de

Prof. Alexander Schill
Chair of Computer Networks
Chairman of the Examination Board
— Room APB 3111
— alexander.schill@tu-dresden.de

responsible for application of
— deadline extensions (especially for thesis submission deadline)
— approval of (external) programme achievements
Good to know!

Mailing-List (dse2017@ifsr.de) – *not (yet) available for 2018*
- register at https://lists.ifsr.de/listinfo/dse2017
- important information and news (especially from SCIS)
- ask questions and engage in discussions

International Office
- provides help with all kinds of problems (VISA, government, dormitory, ...)
- good community for international exchange

Re-registration
- re-register with the matriculation office every semester
- pay the semester contribution on time
- without re-registration you will automatically drop-out
SLUB – Saxonian State and University Library

Central Library (main building):
— Zellescher Weg 18 (#47a on TUD map)

Departmental Library (‘DrePunct’ building):
— Zellescher Weg 17 (#47c on TUD map)

registration with
— online form in advance
— matriculation certificate
— passport

service is free for registered students

http://www.slub-dresden.de
IT Services provided by ZIH

E-Mail
- E-mail address on semester print-out sheet; in general:
  firstname(s).lastname(s)@mailbox.tu-dresden.de
- comes with Microsoft Exchange access
- make sure to set-up account with your mail programme, or set-up a forward (instructions on ZIH website), and check the inbox regularly
- important messages from the university are sent to this address only
  ‘I did not receive the E-Mail’ is not a valid excuse if you miss an exam, et cetera!

Computer Labs (ground level, west wing)
- personal login and first password on semester print-out sheet
- operating hours of computer labs
  weekdays: 7a till 9:30p
  weekend: 10a till 5:30p

WLAN access (eduroam)
- you can use your login also for WLAN access on the campus
- and at every institution which joined the eduroam network (worldwide)
Refectories: Breakfast, Lunch & Dinner

You can pay with EC-card or cash, but Emeal is the convenient choice.

— without Emeal you must show your student ID with each purchase in order to receive student discounts!
— deposit of 5 EUR
— registration with
  ✓ passport
  ✓ student ID
  ✓ Emeal certificate (on semester print-out sheet)
— several refectories at main campus
  nearest one:
  Alte Mensa – Mommsenstraße (#24a on TUD map)
Extra-curricular Activities

Information around study and living
— https://www.study-dresden.com

Cultural Office (International Office, TUD)
— excursions, events, meet people
— https://tu-dresden.de/studium/rund-ums-studium/kulturbuero

Sports (University Sports Center)
— registration online
  (starts next Tuesday, 9 October)
— http://tu-dresden.de/usz
— small fee per semester

Buddy Program
— https://www.aegge-dresden.org/buddy/
WELCOME CITY TOUR ON A DVB TRAM

When?
— Saturday, October 13th

Who?
— Cultural Office, DVB and the students of the Faculty of Transportation and Traffic Sciences

What?
— discover Dresden on a special tram journey
— ride around various parts of the city and show you several sights and POIs.
— personal insights and tips about places to go to and things to do during the winter term
— after the city tour, possibility to go with the tram to the depot and have a look around.

How much?
— free

Tickets?
— at the Cultural Office, during office hours
— during the Matriculation Ceremony, on Thursday, October 4th.

www.tu-dresden.de/kultur
www.facebook.com/kulturbuero
www.twitter.com/kultur_TUD
German Courses

VHS Basic Course, Level A1
- http://www.vhs-dresden.de/?id=189
- Adult Education Centre Dresden

TUDIAS Basic Course, Level A1
- course fee: starting at 400€ excl. learning material
- next start in January; 80 teaching units; twice per week (5p till 8:15p; 8h per week)
- online registration:
  http://www.tudias.de/deutsch-als-fremdsprache/abendkurse/

TU Dresden – Language Courses for Students
- free courses* for foreign students provided by subdivision of TUDIAS
- you (should) have 4 SWS free budget to attend a language course
- http://lskonline.tu-dresden.de/lskonline/de/100.0
Thank you. Questions?