Digital Engineering
Master’s Degree Program

Gunter Saake
October 2023
What is Digital Engineering?
Digital Engineering

= 

Computer Science + Engineering Discipline(s)

- Diverse application scenarios
  - Robotics
  - Autonomous Vehicles
  - ... 
  - Smart factory/Smart home
  - Intelligent Production

Study Program Structure
**Digital Engineering — Structure**

<table>
<thead>
<tr>
<th>Component</th>
<th>CP Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Computer Science</td>
<td>≥ 15 CP (or ≥ 5 CP*)</td>
</tr>
<tr>
<td>Fundamentals of Engineering</td>
<td>≥ 5 CP (or ≥ 15 CP*)</td>
</tr>
<tr>
<td>Human factors</td>
<td>≥ 5 CP</td>
</tr>
<tr>
<td>Methods of Computer Science</td>
<td>≥ 10 CP</td>
</tr>
<tr>
<td>Methods of Engineering</td>
<td>≥ 10 CP</td>
</tr>
<tr>
<td>Interdisciplinary team project</td>
<td>0 - 6 CP</td>
</tr>
<tr>
<td>Specialization</td>
<td>≥ 15 CP</td>
</tr>
<tr>
<td>Digital Engineering project</td>
<td>6 - 12 CP</td>
</tr>
<tr>
<td>Master’s thesis</td>
<td>30 CP</td>
</tr>
</tbody>
</table>

\[\sum 120 \text{ CP}\]

(* dependent on your first study degree)
Where to Choose Modules from?

- Module list:
  1. Go to [https://www.inf.ovgu.de/](https://www.inf.ovgu.de/)
  2. Click on *Examination Office*, on the next page click on *Study Regulations*
  3. There you find everything you need (see screenshot next page)
     - Module list
     - Module catalogue
     - even the (most recent) study regulations
Introduction Digital Engineering

https://www.inf.ovgu.de/en/Study/Being+a+student/Examination+Office/Study+Regulations.html
Where to Choose Modules from?

Some general rules for choosing modules

- Computer Science modules
  - Fundamentals: all courses from FIN Bachelor & Master programs
  - Methods of Computer Science: all courses from FIN Master programs
- Engineering modules
  - Fundamentals: all courses from FEIT/FMB/FVST Bachelor & Master programs
  - Technical Specialization: all courses from FEIT/FMB/FVST Master programs
- Human factors
  - all courses of Bachelor and Master programs of FHW/FWW

The modules offered in the current term are in the LSF

DO NOT use LSF to map modules to thematic areas
First Semester Courses — Example

• For Engineering background
  • Introduction to Computer Science for Engineers
  • Introduction to Software-Engineering for Engineers
  • Introduction to Simulation
  • Algorithm Engineering
  • Database Concepts
• Lectures are given at Summer or Winter term → Distribute them over 1\textsuperscript{st} and 2\textsuperscript{nd} semester
Summer Term — Exemplary Courses

- Introduction to Software Engineering for Engineers (if engineering background)
- Principles and Practices in Scientific Working
- Database Concepts (if engineering background)
- Seminar (Student Conference, Predictive Maintenance, …)
- Nonlinear Control (if computer science background)
- Introduction to Distributed Sensor Data Fusion
Winter Term — Exemplary Courses

• Introduction to Computer Science for Engineers (if engineering background)

• Introduction to Simulation

• Electronic Circuits (if computer science background, ask teacher)

• Systems & Control (if computer science background, ask teacher)

• Estimation for Autonomous Mobile Robots
Choosing Modules to

PLAN YOUR STUDIES
Which Engineering Direction?

- Mechanical
- Electrical
- Chemical
- Medical Engineering
- ....

You choose the courses you want to attend!
Recommendation: Create a Study Plan

1. Find modules:
   - Review modules offered according to the LSF
     https://lsf.ovgu.de/qislsf/rds?state=wtree&search=1&trex=step&root120231=21636%7C21929%7C21800%7C21669&P.vx=kurz
   - read module descriptions (web pages) AND
   - drop by at the first one or two meetings (if no limits)
   - Make sure you have the background needed to attend the course – ASK the teacher if you are not sure

2. Assign modules you choose to thematic areas
   - Go through the module catalog/module list
3. Write down your plan.

4. Update your plan at the end of each semester!
   - What do you have accomplished?
   - Additional courses?
   - Something skipped?
   - It’s all fine to skip courses, but you should keep track of what you got ;)

Recommendation: Create a Study Plan (cont’d)
## Personal Plan of Studies

<table>
<thead>
<tr>
<th>Thematic Area</th>
<th>Semester</th>
<th>Module</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Computer Science</td>
<td>1</td>
<td>1. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3. ...</td>
<td></td>
</tr>
<tr>
<td>Methods of Engineering</td>
<td>2</td>
<td>1. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3. ...</td>
<td></td>
</tr>
<tr>
<td>Human Factors</td>
<td>1</td>
<td>1. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2. ...</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Important Notes on Modules

• Each module is initially **optional** ⇒ you are free to choose a module you want (according to the DE master program structure, cf. slide 5)

• After taking the first exam in a module, it becomes **mandatory** ⇒ you need to finish this module!

• Decisions on thematic areas of modules are done when registering for the exam

• Do not place modules in *Additional Achievements (zusätzliche Leistungen)* ⇒ *credits won’t count…never ever!*
Examinations
Examinations for Master Students

• Each module must be completed with an exam
• What types of exam are there?
  • Oral examination – mündliche Prüfung
  • Written examination – Klausur
  • Homework – Hausarbeit
• Type of exam depends on module —> ASK TEACHER
Examinations for Master Students (cont‘d)

- When planning the 1st exam for a course, **BEWARE**
  - NO automatic enrollment – YOU must take action!
  - There are enrollment deadlines; if you miss a deadline, you cannot enroll
  - You can cancel an enrollment until 7 days before exam.
  - *Never register for an examination where you have not attended the lecture!*

- **BEWARE**
  - At most three tries per course.
  - You can have three tries for three courses total.
    For all other courses you have two tries.
  - *You have only ONCE the chance to step back from the exam of a course!*
Getting Advice
The ultimate landing page with lots of information goes here…

http://www.inf-international.ovgu.de
Even more (specific) information for Incoming Students

You can get Advice from...

1. Studies Coordinators

   - Prof. Benjamin Noack
     Office: G28-001
     E-Mail: benjamin.noack@ovgu.de

   - Prof. Gunter Saake
     Office: G29-110
     E-Mail: saake@iti.cs.uni-magdeburg.de
You can get Advice from…

1. Studies Coordinators
2. Coordinator for DE projects
   - NN
3. International Relationships and Exchange Coordinator
   - Dr. Claudia Krull
     Office: G29-214
     E-Mail: claudia.krull@ovgu.de
You can get Advice from…

1. Studies Coordinators
2. Coordinator for DE projects
3. International Relationships and Exchange Coordinator
4. Examination Office

  Office: FIN building, room 101/102
  Web: http://www.inf.ovgu.de/pamt.html

5. FaRaFIN

  Email: post@farafin.de
  Web: www.farafin.de
You can get Advice from…

1. Studies Coordinators
2. Coordinator for DE projects
3. International Relationships and Exchange Coordinator
4. Examination Office
5. FaRaFIN
6. Other DigiEng students/Mentors
7. DigiEng Facebook Group
   https://www.facebook.com/groups/223056807855119/
8. Moodle Group:
   https://elearning.ovgu.de/course/view.php?id=14567