Preamble to the Module Handbook

Master's Program Computer Engineering v4 (CEMA v4)

Master-Version v4 (2024)

(Study period: 4 Semester)

Faculty of Electrical Engineering, Computer Science and Mathematics
Paderborn University

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2 Description of Program Master Computer Engineering

This module handbook describes the modules and courses of the master program Computer Engineering with their goals, contents and relationships. For students, the module handbook shall provide useful and binding information to support them in planning their studies. For teachers and the interested reader the handbook provides an in-depth view into the structure and organization of the study program.

The following paragraphs present a list of abbreviations, the curriculum of the Master program Computer Engineering and an exemplary schedule of courses, comment on the training of soft skills and show the schemes for describing modules and courses used in this handbook. Details and regulations regarding examination modalities and grading rules are provided in the document "Prüfungsordnung für den Master-Studiengang Computer Engineering", which can be found here.

3 Structure an references of the module handbook

3.1 List of Abbreviations

LP	Leistungspunkt (nach ECTS)	CP	Credit Point (in ECTS)
SWS	Semesterwochenstunden	SWS	Semester load (weekly hours)
WS	Wintersemester	WS	Winter semester / Winter term
SS	Sommersemester	SS	Summer semester / Summer term
2V	Vorlesung mit 2 SWS	2L	Lecture with 2 SWS
2Ü	Übung mit 2 SWS	2Ex	Exercise with 2 SWS
2P	Projekt mit 2 SWS oder Praktikum mit 2 SWS	2P	Project with 2 SWS or Practical Laboratory Course with 2 SWS
2S	Seminar mit 2 SWS	2S	Seminar with 2 SWS
2PS	Projektseminar mit 2SWS	2PS	Project seminar with 2 SWS
P	Pflicht	C	Compulsory
WP	Wahlpflicht	CE	Compulsory elective

Table 1: List of Abbreviations

3.2 Schema of Module Description

The module descriptions are consistently structured according to the following scheme:

Module name			
Module number M.xxx.xxx	**Workload (h)**	**Credits**	**Regular cycle**

Language	Semester number	Duration (in sem.)	Module status (C/CE)
1 Module structure			
Course number Course name: Type with SWS (Time of attendance (h) / Self-study (h) / Status / Group size)			
2 Options within the module			
3 Admission requirements			
4 Contents			
Short Description **Contents**			
5 Learning outcomes and competences			
6 Assessments			
7 Study achievement			
8 Prerequisites for participation in examinations			
9 Prerequisites for assigning credits			
10 Weighing for overall grade			
11 Reuse in degree courses or degree course versions			
12 Module coordinator			
13 Other notes			
Module Homepage **Implementation** **Teaching Material, Literature** **Comments**			

Table 2: Schema of Module Description

4 Remarks and legal references for the program

4.1 Degree plan for the master program Computer Engineering

Figure 1 shows the curriculum and an exemplary schedule of courses for the master program Computer Engineering. The master program comprises four mandatory modules (6 LP each), elective modules (42 LP), a seminar module (6 LP), the module project group (18 LP) and the master theses (30 LP). For the elective modules, the program defines six focus areas for which this handbook lists corresponding module catalogs. Each student selects one out of these focus areas and completes modules totaling

24 LP in this focus area. Another set of modules totaling 18 LP can be selected from any of the focus areas. The seminar module contains a seminar with 4 LP and an elective, ungraded course with 2 LP.

4.1.1 Master program Computer Engineering v4

<table>
<tr><td>1st Semester
30 CP</td><td>Compulsory Module Statistische Signale
6 CP / 180 h</td><td>Compulsory Module Analysis and Design of Electronic Circuits
6 CP / 180 h</td><td>Compulsory Module Advanced Computer Architecture
6 CP / 180 h</td><td>Further Electives Module 1
6 CP / 180 h</td><td>Focus Area Module 1
6 CP / 180 h</td><td></td></tr>
<tr><td rowspan="2">2nd Semester
30 CP</td><td colspan="2">Scientific Working
6 CP</td><td rowspan="2">Compulsory Module Advanced Networked Systems
6 CP / 180 h</td><td rowspan="2">Focus Area Module 2
6 CP / 180 h</td><td rowspan="2">Focus Area Modul e3
6 CP / 180 h</td><td rowspan="3">Project Group Computer Engineering
18 CP / 540 h</td></tr>
<tr><td>Seminar
120 h</td><td>Languages, Writing and Presentation Techniques
60 h</td></tr>
<tr><td>3rd Semester
30 CP</td><td></td><td></td><td>Further Electives Module 2
6 CP / 180 h</td><td>Further Electives Module 3
6 CP / 180 h</td><td>Focus Area Module 4
6 CP / 180 h</td></tr>
<tr><td rowspan="2">4th Semester
30 CP</td><td colspan="2">Final Degree Module
30 CP</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Work Plan
150 h</td><td>Master's Thesis
750 h</td></tr>
</table>

Figure 1: Degree plan for the master program Computer Engineering v4

Focus Areas:

- Embedded Systems
- Nano/Microelectronics
- Computer Systems
- Communication and Networks
- Signal, Image and Speech Processing
- Control and Automation

Further Electives:

Modules can be selected from the Master's elective program in Electrical Engineering and Computer Science.

Master’s Project:

The topic of the master’s thesis must be within the selected focus of study.

4.2 List of organization forms

The following organization forms are used in this program:

- **Final thesis**
- **Lecture with exercises and practical work**
  Combination of a lecture with exercises and a phase of practical work.
- **Lecture with practical assignments**
  A combination consisting of a lecture and exercises. Usually practical problems are solved during the exercises. There may also be homework assignments.
- **Project**
- **Seminar and elective courses**
-

4.3 Examination modalities, requirements for registering for examinations and requirements for the awarding of credit points

The applicable modalities and requirements can be found in the Official and Special Provisions of the relevant degree program.

You can find the regulations here.

4.4 Training of Soft Skills

The master program Computer Engineering includes a number of courses in which training of soft skills is an integral component:

- project group Computer Engineering (module Project Group)
- seminar (module Seminar)
- an elective course in languages or scientific writing (module Seminar)
- master thesis including the presentation of the theses and the work schedule (module Master Thesis)

Besides providing training in a joined-up scientific-technical way of thinking, these courses greatly strengthen communication, presentation, moderation and self-reflection skills. The amount of credit points devoted to soft skills training totals to 54 CP. Actually, the number of courses including soft skills training is much higher, since exercise sessions often require and train communication skills, the ability to work in a team and competences in using modern information technology. This also applies to many of the lectures when using novel forms of teaching.