

Exclosure to Subject Specific Regulations  
 from 25.07.2018  
 for Master-Programme Informatik-  
 Ingenieurwesen  
 at TUHH dual study program  
 Programme Director: Prof. Görschwin Fey  
 Total: 150 CP  
 Number of Specilisations to choose: 4

# Course Scheme Master Computer Science in Engineering (IIWMS) dual study program

Consolidated Version  
 for Study Cohort: WiSe22/23  
 en\_head\_sda  
 and Approval of Chair from:  
 11.01.2023  
 Replaces Version from: 20.04.2022  
 In Force on: 01.10.2022  
 Out of Force on: 30.09.2025

Information regarding the lectures are available in the TUHH modul manuals as well as in the course catalogue.

|  |  | Module   |                      |           |          |           | Examination |  |                     | Course Work |                  |              |
|--|--|----------|----------------------|-----------|----------|-----------|-------------|--|---------------------|-------------|------------------|--------------|
| Re-com. Term   | Module Name (German / English)   | Language | ModuleResponsability | Institute | C/EC (1) | CM/OM (2) | CP (4)      | Grade  | Examination Form(3) | Compulsory  | Course Work Type | Bonus (in %) |
| <b>Core Qualification</b> Compulsory Courses: 54 LP Optional Courses: 0 LP                 |  |          |                      |           |          |           |             |  |                     |             |                  |              |
| 1  | Praxismodul 1 im dualen Master / Practical module 1 (dual study program, Master's degree)                      | DE       | Dr. Haschke          | 0-SLS     | C        | CM        | 10          | N  | SA                  |             |                  |              |
| 2  | Praxismodul 2 im dualen Master / Practical module 2 (dual study program, Master's degree)                      | DE       | Dr. Haschke          | 0-SLS     | C        | CM        | 10          | N  | SA                  |             |                  |              |
| 3  | Forschungsprojekt / Research Project   | DE / EN  | Prof. Fey            | SD-E      | C        | CM        | 12          | Y  | STA                 |             |                  |              |
| 3  | Praxismodul 3 im dualen Master / Practical module 3 (dual study program, Master's degree)                      | DE       | Dr. Haschke          | 0-SLS     | C        | CM        | 10          | N  | SA                  |             |                  |              |
| 1-3  | Theorie-Praxis-Verzahnung im dualen Master / Linking theory and practice (dual study program, Master's degree) | DE       | Dr. Haschke          | 0-SLS     | C        | CM        | 6           | N  | SA                  |             |                  |              |
| 1-3  | Betrieb & Management / Business & Management   | DE / EN  | Prof. Meyer          | W-1       | C        | OM        | 6           | Selection out of seperatly published Catalogue |                     |             |                  |              |
| <b>Specialisation I. Computer Science</b> Compulsory Courses: 0 LP Optional Courses: 18 LP |  |          |                      |           |          |           |             |  |                     |             |                  |              |
| 1  | Sicherheit von Cyber-physischen Systemen / Security of Cyber-Physical Systems                                  | EN       | Prof. Fröschle       | E-15      | EC       | CM        | 6           | Y  | KL                  | N           | ÜA               | 10           |
| 1  | Software-Sicherheit / Software Security  | EN       | Prof. Scandariato    | E-22      | EC       | CM        | 6           | Y  | KL                  |             |                  |              |
| 1  | Softwareverifikation / Software Verification   | EN       | Prof. Schupp         | E-16      | EC       | CM        | 6           | Y  | KL                  | Y           | ÜA               | 15           |
| 2  | Advanced Internet Computing / Advanced Internet Computing  | EN       | Prof. Schulte        | E-19      | EC       | CM        | 6           | Y  | FFA                 | Y           | FFST             | 20           |
| 2  | Algorithmische Spieltheorie / Algorithmic Game Theory  | DE / EN  | Prof. Mnich          | E-11      | EC       | CM        | 6           | Y  | KL                  |             |                  |              |
| 2  | Autonomous Cyber-Physical Systems / Autonomous Cyber-Physical Systems  | EN       | Prof. Renner         | E-24      | EC       | CM        | 6           | Y  | KL                  | N           | TE               | 10           |
| 2  | Constraint Satisfaction Problems / Constraint Satisfaction Problems  | EN       | Prof. Mottet         | E-EXK6    | EC       | CM        | 6           | Y  | MP                  |             |                  |              |

|   |   | Module   |                      |           |          |           | Examination |       |                     | Course Work |                  |              |
|---|---|----------|----------------------|-----------|----------|-----------|-------------|-------|---------------------|-------------|------------------|--------------|
| Re-com. Term  | Module Name (German / English)  | Language | ModuleResponsability | Institute | C/EC (1) | CM/OM (2) | CP (4)      | Grade | Examination Form(3) | Compulsory  | Course Work Type | Bonus (in %) |
| 2   | Entwurf von Dependable Systems / Design of Dependable Systems   | DE / EN  | Prof. Fey            | E-13      | EC       | CM        | 6           | Y     | MP                  | Y           | FFST             | 0            |
| 3   | Kommunikationsnetze / Communication Networks  | EN       | Prof. Timm-Giel      | E-4       | EC       | CM        | 6           | Y     | RE                  |             |                  |              |
| 3   | Massiv parallele Systeme: Architektur und Programmierung / Massively Parallel Systems: Architecture and Programming   | EN       | Prof. Lal            | E-EXK5    | EC       | CM        | 6           | Y     | MP                  | Y           | FFST             | 20           |
| 3   | Medizinische Bildgebung / Medical Imaging   | DE / EN  | Prof. Knopp          | E-5       | EC       | CM        | 6           | Y     | KL                  |             |                  |              |
| <b>Specialisation II. Engineering Science</b> Compulsory Courses: 0 LP Optional Courses: 12 LP    |   |          |                      |           |          |           |             |       |                     |             |                  |              |
| 1   | Digitale Nachrichtenübertragung / Digital Communications  | DE / EN  | Prof. Bauch          | E-8       | EC       | CM        | 6           | Y     | KL                  | Y           | SA               | 0            |
| 1   | Elektrische Energiesysteme II: Betrieb und Informationssysteme elektrischer Energienetze / Electrical Power Systems II: Operation and Information Systems of Electrical Power Grids | DE       | Prof. Becker         | E-6       | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| 2   | Informationstheorie und Codierung / Information Theory and Coding   | EN       | Prof. Bauch          | E-8       | EC       | CM        | 6           | Y     | KL                  |             |                  |              |
| 2   | Intelligente Systeme Projekt / Intelligent Systems Lab  | DE / EN  | Prof. Schlaefer      | E-1       | EC       | CM        | 6           | Y     | SA                  | Y           | GD               | 0            |
| 2   | Maschinelles Lernen in der Elektro- und Informationstechnik / Machine Learning in Electrical Engineering and Information Technology   | EN       | Prof. Bauch          | E-8       | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| 3   | Digitale Signalverarbeitung und Digitale Filter / Digital Signal Processing and Digital Filters   | EN       | Prof. Bauch          | E-8       | EC       | CM        | 6           | Y     | KL                  |             |                  |              |
| <b>Specialisation III. Mathematics</b> Compulsory Courses: 0 LP Optional Courses: 12 LP           |   |          |                      |           |          |           |             |       |                     |             |                  |              |
| 1   | Lineare und Nichtlineare Optimierung / Linear and Nonlinear Optimization  | DE / EN  | Prof. Mnich          | E-11      | EC       | CM        | 6           | Y     | KL                  |             |                  |              |
| 1   | Mathematische Bildverarbeitung / Mathematical Image Processing  | DE / EN  | Prof. Lindner        | E-10      | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| 2   | Numerische Mathematik II / Numerical Mathematics II   | DE / EN  | Prof. Le Borne       | E-10      | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| 2   | Randomisierte Algorithmen und Zufällige Graphen / Randomised Algorithms and Random Graphs   | DE / EN  | Prof. Taraz          | E-10      | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| 3   | Fortgeschrittenes maschinelles Lernen / Advanced Machine Learning   | DE / EN  | Dr. Zemke            | E-10      | EC       | CM        | 6           | Y     | MP                  |             |                  |              |
| <b>Specialisation IV. Subject Specific Focus</b> Compulsory Courses: 0 LP Optional Courses: 24 LP |   |          |                      |           |          |           |             |       |                     |             |                  |              |

|  |   | Module   |                      |           |          |           | Examination |   |                     | Course Work |                  |              |
|--|---|----------|----------------------|-----------|----------|-----------|-------------|---|---------------------|-------------|------------------|--------------|
| Re-com. Term   | Module Name (German / English)  | Language | ModuleResponsability | Institute | C/EC (1) | CM/OM (2) | CP (4)      | Grade                                     | Examination Form(3) | Compulsory  | Course Work Type | Bonus (in %) |
| 2  | Technischer Ergänzungskurs I für IIW / Technical Complementary Course I for Computational Science and Engineering   |          | Prof. Fey            | SD-E      | EC       | OM        | 12          | according to Subject Specific Regulations |                     |             |                  |              |
| 3  | Technischer Ergänzungskurs II für IIW / Technical Complementary Course II for Computational Science and Engineering |          | Prof. Fey            | SD-E      | EC       | OM        | 12          | according to Subject Specific Regulations |                     |             |                  |              |
| <b>Thesis</b> Compulsory Courses: 30 LP Optional Courses: 0 LP |   |          |                      |           |          |           |             |   |                     |             |                  |              |
| 4  | Masterarbeit im dualen Studium / Master thesis (dual study program)   |          | Professoren der TUHH | 0-TUHH    | C        | CM        | 30          | Y   | AB                  |             |                  |              |

### Explanation:

<sup>1</sup>C=Compulsory, EC=Elective Compulsory

<sup>2</sup>CM=Compulsory Defined Module, OM=Optional Defined Module

<sup>3</sup>KL=Written exam, SA=Written elaboration, FFA=Subject theoretical and practical work, FFST=Subject theoretical and practical work, MP=Oral exam, RE=Presentation, GD=Group discussion, STA=Study work, AB=Thesis, UA=Exercises, SA It. FPO=Written elaboration (accord. to Internship Regulations), TE=Attestation

<sup>4</sup>CP=Credit Points

<sup>5</sup>VL=Lecture, SE=Seminar, GÜ=Recitation Section (small), PBL=Project-/problem-based Learning, PR=Practical Course, PK=Projection Course, HÜ=Recitation Section (large)

<sup>6</sup>DE=German, EN=English, DE/EN=German and English

<sup>7</sup>SWS=Contact hours