

Exclosure to Subject Specific Regulations  
from 25.07.2018  
for Master-Programme Informatik-  
Ingenieurwesen  
at TUHH  
Programme Director: Prof. Görschwin Fey  
Total: 120 CP  
Number of Specilisations to choose: 4

# TUHH

## Course Scheme Master Computer Science in Engineering (IIWMS)

Consolidated Version  
for Study Cohort: WiSe22/23  
en\_head\_sda  
and Approval of Chair from:  
21.06.2023  
Replaces Version from: 15.03.2023  
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 %) |
| Core Qualification    Compulsory Courses: 24 LP    Optional Courses: 0 LP                 |                                                                                                                     |          |                      |           |          |           |             |                                                |                     |             |                  |              |
| 3                                                                                         | Forschungsprojekt / Research Project                                                                                | DE / EN  | Prof. Fey            | SD-E      | C        | CM        | 12          | Y                                              | STA                 |             |                  |              |
| 1-3                                                                                       | Nichttechnische Angebote im Master / Non-technical Courses for Master                                               | DE / EN  | Richter              | 0-TUHH    | C        | OM        | 6           | Selection out of seperatly published Catalogue |                     |             |                  |              |
| 1-3                                                                                       | Betrieb & Management / Business & Management                                                                        | DE / EN  | Prof. Meyer          | W-1       | C        | OM        | 6           | Selection out of seperatly published Catalogue |                     |             |                  |              |
| Specialisation I. Computer Science    Compulsory Courses: 0 LP    Optional Courses: 18 LP |                                                                                                                     |          |                      |           |          |           |             |                                                |                     |             |                  |              |
| 1                                                                                         | Sicherheit von Cyber-phisichen 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                 |             |                  |              |
| 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. Wiehe          | E-EXK6    | EC       | CM        | 6           | Y                                              | MP                  |             |                  |              |
| 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                  |             |                  |              |

| 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 %) |
| Specialisation II. Engineering Science    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                  |             |                  |              |
| Specialisation III. Mathematics    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                                         | KL                  |             |                  |              |
| Specialisation IV. Subject Specific Focus    Compulsory Courses: 0 LP    Optional Courses: 24 LP |                                                                                                                                                                                     |          |                      |           |          |           |             |                                           |                     |             |                  |              |
| 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 |                     |             |                  |              |
| Thesis    Compulsory Courses: 30 LP    Optional Courses: 0 LP                                    |                                                                                                                                                                                     |          |                      |           |          |           |             |                                           |                     |             |                  |              |

|  | Module              |                                |          |                      |           |          |               | Examination |       |                             | Course Work |                        |                 |
|--|---------------------|--------------------------------|----------|----------------------|-----------|----------|---------------|-------------|-------|-----------------------------|-------------|------------------------|-----------------|
|  | Re-<br>com.<br>Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/<br>OM (2) | CP (4)      | Grade | Exami-<br>nation<br>Form(3) | Compulsory  | Course<br>Work<br>Type | Bonus (in<br>%) |
|  | 4                   | Masterarbeit / Master Thesis   |          | 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, FFST=Subject theoretical and practical work, FFA=Subject theoretical and practical work, MP=Oral exam, RE=Presentation, GD=Group discussion, STA=Study work, ÜA=Excercises, AB=Thesis, SA it. FPRO=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