# Annex SFB

# Studienfachbeschreibung (subject description, SFB) for the subject
## Artificial Intelligence & Extended Reality as a Master's with 1 major
## with the degree "Master of Science" (120 ECTS credits)

Responsible: Faculty of Mathematics and Computer Science                    Examination regulations version: 2024
Responsible: Institute of Computer Science                                          Examination regulations version: 2024

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|---|---|
| Abbreviations used: | Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture |
| | Term: **SS** = summer semester, **WS** = winter semester |
| | Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed |
| | Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules |
| | Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s) |
| Conventions for the modules in this SFB: | Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus. |
| Information on assessment procedures: | Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner. |
| | Should a module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below. |
| | Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments. |

In accordance with the general regulations governing the degree subject described in this module catalogue:

**ASPO2015**

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

**31-Jan-2024 (2024-8)**

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

Every module will be described using the following form:

| Abbreviation | **Module title** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | | Duration | (in semesters) | Method of grading | | Module level | |
| | Courses | | To be specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y | | | | |
| | Method of assessment | | | | | | |
| | Only after successful completion of | if applicable | | | | | |
| | Other prerequisites | if applicable | | | | | |
| | Participants and allocation of places | if applicable | | | | | |
| | Additional information | if applicable | | | | | |
| | Referred to in LPO I | if applicable (examination regulations for teaching-degree programmes) | | | | | |

## Compulsory Courses (35 ECTS credits)

| 10-xtAI=L1-242-m01 | **AI&XR Lab 1** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | R (3) <br> Module taught in: English | | | | | |
| | Method of assessment | | Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic <br> Language of assessment: English <br> Creditable for bonus | | | | | |

| 10-xtAI=L2-242-m01 | **AI&XR Lab 2** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 10 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | R (6) <br> Module taught in: English | | | | | |
| | Method of assessment | | Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic <br> Language of assessment: English <br> Creditable for bonus | | | | | |

| 10-xtAI=L3-242-m01 | **AI&XR Lab 3** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 10 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | R (6) <br> Module taught in: English | | | | | |
| | Method of assessment | | Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic <br> Language of assessment: English <br> Creditable for bonus | | | | | |

| 10-xtAI=IAI-202-m01 | **Introduction in AI** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) <br> Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes) <br> If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). <br> Language of assessment: English <br> Creditable for bonus | | | | | |

| 10-xtAI=M-L1-242-m01 | **Machine Learning** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | | |

## Electives Field (55 ECTS credits)

## AI&XR Seminars (min. 5 to max. 10 ECTS credits)

| 10-xtAI=SEM1-242-m01 | **Seminar 1 - Artificial Intelligence & Extended Reality** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | S (2)<br>Module taught in: English | | | | | | |
| | Method of assessment | | Term paper (10 to 15 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic<br>Language of assessment: English<br>Creditable for bonus | | | | | | |

| 10-xtAI=SEM2-242-m01 | **Seminar 2 - Artificial Intelligence & Extended Reality** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | S (2)<br>Module taught in: English | | | | | | |
| | Method of assessment | | Term paper (10 to 15 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic<br>Language of assessment: English<br>Creditable for bonus | | | | | | |

## Core AI Methods (min. 10 to max. 35 ECTS credits)

| 10-xtAI=DS1-202-m01 | **Data Science 1** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | | |

| 10-xtAI=DS2-202-m01 | **Data Science 2** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | |
| 10-xtAI=M-L2-242-m01 | **Advanced Machine Learning** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | |
| 10-xtAI=NLP1-202-m01 | **Natural Language Processing 1** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | |
| 10-xtAI=NLP2-202-m01 | **Natural Language Processing 2** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | |

| 10-xtAI=TAI1-202-mo1 | **Theory of Artificial Intelligence 1** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) <br> Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes) <br> If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). <br> Language of assessment: English <br> Creditable for bonus | | | | | |
| 10-xtAI=TAI2-202-mo1 | **Theory of Artificial Intelligence 2** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) <br> Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes) <br> If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). <br> Language of assessment: English <br> Creditable for bonus | | | | | |
| 10-AI=CV1-242-mo1 | **Computer Vision 1** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) <br> Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes) <br> If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). <br> Language of assessment: English <br> Creditable for bonus | | | | | |
| 10-AI=CV2-242-mo1 | **Computer Vision 2** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) <br> Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes) <br> If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). <br> Language of assessment: English <br> Creditable for bonus | | | | | |

| 10-I=MLN1-232-m01 | **Machine Learning for Networks 1** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>creditable for bonus | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,IT,SE,KI,HCI,IN | | | | |
| 10-I=MLN2-232-m01 | **Machine Learning for Networks 2** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>creditable for bonus | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,IT,SE,KI,HCI,IN | | | | |
| 10-I=IP-222-m01 | **Image Processing and Computational Photography** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | |

| 10-I=RLCD-M-222-m01 | **Reinforcement Learning and Computational Decision-Making** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>Creditable for bonus | | | | |
| 10-I=M-NLP-222-m01 | **Multilingual NLP** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | |
| 10-xtAI=AIM1-202-m01 | **Selected Topics in AI Methods 1** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | |
| 10-xtAI=AIM2-202-m01 | **Selected Topics in AI Methods 2** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | |

| Core XR Methods (min. 10 to max. 20 ECTS credits) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10-HCI-PRIS-212-m01 | **Principles of Interactive Systems** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | | |
| | Method of assessment | | a) written examination (approx. 90 minutes) or<br>b) oral examination of one candidate each (approx. 30 minutes)<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| 10-HCI-MMI-212-m01 | **Multimodal Interfaces** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | | |
| | Method of assessment | | a) written examination (approx. 90 minutes) or<br>b) presentation of project results (approx. 30 minutes) or<br>c) oral examination of one candidate each (approx. 30 minutes)<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| 10-HCI-3DUI-212-m01 | **3D User Interfaces** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | | |
| | Method of assessment | | a) presentation of project results (approx. 30 minutes) or<br>b) oral examination of one candidate each (approx. 30 minutes)<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| 10-xtAI=XR-M-202-m01 | **Selected Topics in XR Methods** | | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | a) Written examination (approx. 60 to 90 minutes) or<br>b) Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic or<br>c) Oral examination of one candidate each (approx. 20 minutes) or<br>d) oral examination in groups (max. 3 candidates, each approx. 15 minutes)<br>Language of assessment: English<br>Creditable for bonus | | | | | |

| AI&XR Application & Technologies (min. 10 to max. 25 ECTS credits) | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10-LU-RI=3D-202-m01 | **3D Point Cloud Processing** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>creditable for bonus | | | | |
| 10-LURI=PHO-TO-232-m01 | **Photogrammetric Machine Vision** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>Creditable for bonus | | | | |
| 10-LU-RI=AMS-232-m01 | **Autonomous Mobile Systems** | | | | | | |
| | ECTS | 10 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (4) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>Creditable for bonus | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits):<br>IT, KI, ES, LR, GE | | | | |

| 10-LU-RI=RO1-232-m01 | **Robotics 1** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits):<br>KI, ES, LR, HCI, GE | | | | |
| 10-LU-RI=RO2-232-m01 | **Robotics 2** | | | | | | |
| | ECTS | 10 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (4) + Ü (2) + P (1)<br>Module taught in: German and/or English | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>creditable for bonus | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits):<br>KI, ES, LR, HCI, GE | | | | |
| 10-I=DB2-212-m01 | **Databases 2** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>creditable for bonus<br>Language of assessment: German and/or English | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,KI,HCI | | | | |

| 10-I=DRLOC-221-m01 | **Deep Reinforcement Learning for Optimal Control** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>creditable for bonus | | | | | |
| 10-xtAI=SAC-202-m01 | **Self-aware Computing** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | | |
| 10-I=ICG-232-m01 | **Interactive Computer Graphics** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) | | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): HCI. | | | | | |
| 10-xtAI=WPrak-t-242-m01 | **Scientific Internship AI&XR** | | | | | | |
| | ECTS | 10 | Duration | 1 semester | Method of grading | (not) successfully completed | Modul level | graduate |
| | Courses | | P (6) | | | | | |
| | Method of assessment | | Report on practical course (approx. 10 pages) with presentation (30-45 min.) and subsequent discussion on the topic<br>Language of assessment: German and/or English | | | | | |
| | Additional Information | | 8 Weeks | | | | | |

| 10-xtAI=IS-S-242-m01 | **International Summer School AI&XR** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | R (6)<br>Module taught in: English | | | | |
| | Method of assessment | | a) Written examination (approx. 60 to 120 minutes) or<br>b) Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic or<br>c) Oral examination of one candidate each (approx. 20 minutes) or<br>d) oral examination in groups (max. 3 candidates, each approx. 15 minutes)<br>Language of assessment: English | | | | |
| | Additional Information | | Project will be block taught, 4 - 6 weeks | | | | |
| 07-MLBI-202-m01 | **Machine Learning in Bioinformatics** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | Written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>Creditable for bonus | | | | |
| | Participants and allocation of places | | 10 places. Should the number of applications exceed the number of available places, places will be allocated by lot. | | | | |
| 10-xtAI=ST-242-m01 | **Selected Topics in AI&XR Application & Technologies** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2)<br>Module taught in: English | | | | |
| | Method of assessment | | a) Written examination (approx. 60 to 90 minutes) or<br>b) Project: report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic or<br>c) Oral examination of one candidate each (approx. 20 minutes) or<br>d) oral examination in groups (max. 3 candidates, each approx. 15 minutes)<br>Language of assessment: English<br>Creditable for bonus | | | | |

| 10-I=MIR-222-m01 | **Music Information Retrieval** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | | |
| | Method of assessment | a) written examination (approx. 60 to 120 minutes) or<br>b) oral examination of one candidate each (approx. 20 minutes) or<br>c) oral examination in groups of up to 3 candidates (approx. 15 minutes)<br>Language of assessment: German and/or English<br>Creditable for bonus | | | | | |
| | Additional Information | possible majors for MA 120 Computer Science: GE | | | | | |
| 10-I=RRS-232-m01 | **Remote Sensing** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2)<br>Module taught in: German and/or English | | | | | |
| | Method of assessment | written examination (approx. 60 to 120 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or EnglishCreditable for bonus | | | | | |
| | Additional Information | possible majors for MA 120 Computer Science: LR,IN | | | | | |

### Computer Science (min. 0 to max. 10 ECTS credits)

| 10-I=ST-232-m01 | **Discrete Event Simulation** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2) | | | | | |
| | Method of assessment | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| | Additional Information | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits):<br>IT,KI,ES,GE,IN | | | | | |

| 10-I=SSS-232-m01 | **Security of Software Systems** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2)<br>Module taught in: English | | | | | |
| | Method of assessment | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: English<br>creditable for bonus | | | | | |
| | Additional Information | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,KI,LR, HCI, ES, SEC,IN | | | | | |
| 10-I=DDB-172-m01 | **Deductive Databases** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2) | | | | | |
| | Method of assessment | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>Language of assessment: German and/or English<br>creditable for bonus | | | | | |
| | Additional Information | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT, SE, IT, IS. | | | | | |
| 10-I=LP-212-m01 | **Logic Programming** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | V (2) + Ü (2) | | | | | |
| | Method of assessment | written examination (approx. 60 to 120 minutes).<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).<br>creditable for bonus<br>Language of assessment: German and/or English | | | | | |
| | Additional Information | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,SE,IT,KI | | | | | |

| 10-I=SB-212-m01 | **Systems Benchmarking** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes). If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). creditable for bonus Language of assessment: German and/or English | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,ES,HCI,GE | | | | |
| 10-I=APR-212-m01 | **Advanced Programming** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü (2) | | | | |
| | Method of assessment | | written examination (approx. 60 to 120 minutes). If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). creditable for bonus Language of assessment: German and/or English | | | | |
| | Additional Information | | Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,KI,LR, HCI, ES,GE,SEC | | | | |
| 10-I=AKII-232-m01 | **Selected Topics in Computer Science** | | | | | | |
| | ECTS | 5 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | V (2) + Ü/S (2) | | | | |
| | Method of assessment | | a) written examination (approx. 60 to 120 minutes) or b) practical project (project documentation (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic) or c) oral examination of one candidate each (approx. 20 minutes) or d) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus | | | | |

## Master Project Modules (30 ECTS credits)

| 10-xtAI=MA-242-m01 | **Master's Thesis AI&XR** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 25 | Duration | 1 semester | Method of grading | numerical grade | Modul level | graduate |
| | Courses | | | | | | |
| | Method of assessment | | Master-Thesis (50-100 S.) Language of assessment: English | | | | |
| | Additional Information | | Time to complete: 6 month | | | | |

| 10-xtAI=M-K-242-m01 | **Concluding Colloquium AI&XR** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ECTS | 5 | Duration | 1 semester | Method of grading | (not) successfully completed | Modul level | graduate |
| | Courses | | K (o) | | | | |
| | Method of assessment | | Final colloquium (approx. 60 minutes) <br> Language of assessment: English | | | | |