Module Catalogue
for the Subject
Human-Computer-Interaction
as a Master’s with 1 major
with the degree "Master of Science"
(120 ECTS credits)

Examination regulations version: 2015
Responsible: Faculty of Human Sciences
Responsible: Institute of Human Computer Media
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Master's with 1 major Human-Computer-Interaction

Master's with 1 major Human-Computer-Interaction (2015)

JMU Würzburg • generated 17-Sep-2019 • exam. reg. data record Master (120 ECTS) Human-Computer-Interaction - 2015

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Content and Objectives of the Programme

The Master of Human-Computer Interaction is an interdisciplinary course of studies that teaches HCI-related competencies as well as competencies in computer science and psychology. The course imparts advanced knowledge on the following subjects:

- Programming and programming techniques;
- Software design and analysis;
- Usability management, human factors design and user experience design;
- User interface design of interactive systems;
- Advanced interaction techniques and paradigms;
- Advanced statistical methods;
- Technological foundations of computational systems;
- Interdisciplinary relationships to other fields of application.

Graduates strengthen the following methodological competencies:

- Analytic thinking and planning and the ability to abstract;
- Algorithmic thinking and design;
- Understanding of and the ability to structure complex relationships in research and application;
- Ability to develop and carry out HCI projects in practice;
- Specialised skills in designing experiments and advanced statistics.

Graduates can apply their knowledge and understanding as well as their problem-solving skills to new and unfamiliar situations that lie in a broad or multidisciplinary context relating to their academic field. They can make scientifically-founded decisions and draw conclusions, also on the basis of incomplete or limited information. They can consider and communicate social, scientific and ethical insights that also derive from the application of their knowledge and their decisions. They can independently acquire new knowledge and ability and can carry out independent scientific or applied research projects in a largely self-directed manner. They can take on lead responsibility in a team.
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

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

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 the 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)):


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.
Compulsory Courses
(70 ECTS credits)
Module title | Abbreviation
---|---
Realtime Interactive Systems | 10-HCI-RIS-152-m01

Module coordinator | Module offered by
holder of the Chair of Computer Science IX | Institute of Computer Science

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Contents

This course provides an introduction to the requirements, concepts and engineering art of highly interactive human-computer systems. Such systems are typically found in perceptual computing, virtual, augmented, mixed reality, computer games and cyber-physical systems. Lately, these systems are often termed real-time interactive systems (RIS) due to their common aspects.

The course covers theoretical models derived from the requirements of the application area as well as common hands-on and novel solutions necessary to tackle and fulfil these requirements. The first part of the course will concentrate on the conceptual principles characterising real-time interactive systems. Questions answered are: What are the main requirements? How do we handle multiple modalities? How do we define the timeliness of RIS? Why is it important? What do we have to do to assure timeliness? The second part will introduce a conceptual model of the mission-critical aspects of time, latencies, processes and events necessary to describe a system’s behaviour. The third part introduces the application state, its requirements of distribution and coherence and the consequences these requirements have on decoupling and software quality aspects in general. The last part introduces some potential solutions to data redundancy, distribution, synchronisation and interoperability.

Along the way, typical and prominent state-of-the-art approaches to reoccurring engineering tasks are discussed. This includes pipeline systems, scene graphs, application graphs (aka field routing), event systems, entity and component models and others. Novel concepts like actor models and ontologies will be covered as alternative solutions. The theoretical and conceptual discussions will be put into a practical context of today's commercial and research systems, e. g. X3D, instant reality, Unity3d, Unreal Engine 4 and Simulator X.

Intended learning outcomes

At the end of the course, the students will have a solid understanding of the boundary conditions defined by both the physiological and psychological characteristics of human users as well as by the architectures and technological characteristics of today's computer systems. The students will have gained a solid understanding of what they can expect from today's technological solutions. They will be able to choose the appropriate approach and tools to solve a given engineering task in this application area and they will be equipped with a solid theoretical foundation enabling them to develop alternative approaches for future real-time interactive systems.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 90 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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### Module title

3D User Interfaces

### Abbreviation

10-HCI-3DUI-152-m01

### Module coordinator

holder of the Chair of Computer Science IX

### Module offered by

Institute of Computer Science

### ECTS

5

### Method of grading

numerical grade

### Only after succ. compl. of module(s)

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### Duration

1 semester

### Module level

graduate

### Other prerequisites

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### Contents

This module will introduce students to the particularities of 3D user interface (3DUI) development using virtual, augmented or mixed reality technologies. The module will mainly focus on equipping students with the skills essential to the design and implementation of high-quality 3D interaction techniques and providing them with an opportunity to practise these skills. Students will become familiar with design guidelines as well as with classic and innovative 3D interaction techniques. In addition, the course will address novel research areas such as 3D interaction for large displays and games as well as the integration of 3DUIs into mobile devices, robotics and the environment. Assessment will take the form of a practical team project which will consist of a program, a presentation, a technical report (2 pages) and a video. In previous years, the IEEE 3DUI Contest 2011 was replicated with teams of students competing to find the best solution (results see video 1(https://www.youtube.com/watch?v=gYs-pBW7Agc) and video 2(https://www.youtube.com/watch?v=gYs-pBW7Agc)).

### Intended learning outcomes

At the end of the course, the students will have a solid background knowledge on the theory and methods for the creation of their own 3D spatial interfaces. They will have a broad understanding of the particular difficulties associated with the design, development and evaluation of spatial interfaces. In addition, students will have learned about traditional and novel 3D input/output devices (e.g. motion tracking systems and head-mounted display).

### Courses

(type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

presentation of project results (approx. 30 minutes)

Language of assessment: German and/or English

creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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Module title: Machine Learning

Abbreviation: 10-HCI-ML-152-m01

Module coordinator: holder of the Chair of Computer Science IX

Module offered by: Institute of Computer Science

ECTS: 5

Method of grading: numerical grade

Duration: 1 semester

Module level: graduate

Other prerequisites: --

Contents:

Machine learning is the science of getting computers to act without being explicitly programmed. In the past decade, machine learning has given us practical speech recognition, effective web search, self-driving cars and a vastly improved understanding of the human genome. Machine learning is so pervasive today that you probably use it dozens of times a day without knowing it. It is one of today's prominent paradigms in HCI applicable in all areas where the understanding of user input of high variability, specifically for natural interactions using, e.g. gesture, speech or eye-gaze, is paramount. Many researchers also think it is the best way to make progress towards human-level AI.

In this course, students will learn about the most effective machine learning techniques, and gain practice implementing them and getting them to work. Students not only learn the theoretical underpinnings of learning, but also gain the practical know-how needed to quickly and powerfully apply these techniques to new problems. Finally, they learn about some of Silicon Valley's best practices in innovation as it pertains to machine learning and AI.

This course provides a broad introduction to machine learning, data-mining and statistical pattern recognition. Topics include: (i) Supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks). (ii) Unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning). (iii) Best practices in machine learning (bias/variance theory; innovation process in machine learning and AI). The course will also draw from numerous case studies and applications, so that you’ll also learn how to apply learning algorithms to building gesture-based and multimodal interfaces, text and speech understanding (web search, anti-spam), smart robots (perception, control), computer vision, medical informatics, audio, database mining and other areas.

Intended learning outcomes:

At the end of the course, the students will be able to independently solve machine learning tasks, using assistive technologies such as Octave. In addition, they will be able to derive fundamental principles and to apply these in their own programs. Students will be able to choose the appropriate approaches and tools for the solution of a given machine learning task in various application areas and, in particular, in HCI.

Courses:

V (2) + Ü (2)

Module taught in: German and/or English

Method of assessment:

Presentation of project results (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places: --

Additional information: --

Referred to in LPO I (examination regulations for teaching-degree programmes): --
**Module title**
Multimodal Interfaces

**Abbreviation**
10-HCI-MMI-152-m01

**Module coordinator**
holder of the Chair of Computer Science IX

**Module offered by**
Institute of Computer Science

**ECTS**
5

**Method of grading**
numerical grade

**Duration**
1 semester

**Module level**
graduate

**Other prerequisites**
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**Contents**
The multimodal interaction paradigm simultaneously uses various modalities like speech, gesture, touch or gaze, to communicate with computers and machines. Basically, multimodal interaction includes the analysis as well as the synthesis of multimodal utterances. This course concentrates on the analysis, i.e. the input processing. Input processing has the goal to derive meaning from signal to provide a computerised description and understanding of the input and to execute the desired interaction. In multimodal systems, this process is interleaved between various modalities and multiple interdependencies exist between simultaneous utterances necessary to take into account for a successful machine interpretation.

In this course, students will learn about the necessary steps involved in processing unimodal as well as multimodal input. The course will highlight typical stages in multimodal processing. Using speech processing as a primary example, they learn about:
1. A/D conversion
2. Segmentation
3. Syntactical analysis
4. Semantic analysis
5. Pragmatic analysis
6. Discourse analysis

A specific emphasis will be on stages like morphology and semantic analysis. Typical aspects of multimodal interdependencies, i.e. temporal and semantic interrelations are highlighted and consequences for an algorithmic processing are derived. Prominent multimodal integration (aka multimodal fusion) approaches are described, including transducers, state machines and unification.

**Intended learning outcomes**
At the end of the course, the students will be able to build their own multimodal interfaces. They will have a broad understanding of all the necessary steps involved and will know prominent algorithmic solutions for each of them. Student will have learned about available tools for reoccurring tasks as well as their pros and cons.

**Courses**

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Module taught in: German and/or English

**Method of assessment**
written examination (approx. 90 minutes) or presentation of project results (approx. 30 minutes)

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**
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**Additional information**
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)
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### Module title

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### Module coordinator
holder of the Chair of Psychological Ergonomics

### Module offered by
Institute of Human Computer Media

### ECTS
5

### Method of grading
numerical grade

### Only after succ. compl. of module(s)
--

### Duration
1 semester

### Module level
graduate

### Other prerequisites
--

### Contents
Human-computer interaction is a discipline at the interface between social and computer science. It explores how humans use devices and systems and how the usefulness and the usability of these devices and systems may be enhanced. In the early years of the discipline, the development of theories and models was influenced mainly by theories from the cognitive sciences on perception, motor functions, memory etc. The development in the cognitive sciences, the increasingly international character and rapid technological progress then led to both a specialisation and new theoretical approaches in HCI. This seminar will explore classic as well as new theoretical approaches and methods in HCI trying to find a common framework despite all specialisation and fragmentation.

### Intended learning outcomes

German intended learning outcomes available but not translated yet.

Nach der Teilnahme an diesem Modul habe die Studierenden eine umfangreiche Kenntnis über theoretische Ansätze und Methoden der HCI und unterscheiden aus welchen Traditionen bestimmte theoretische Ansätze und Methoden entstanden sind. Diese Kenntnisse ermöglichen eine Einschätzung der Angemessenheit einer Theorie oder Methode für ein spezielles Problem und ermöglichen damit auch eine theoretisch begründete und bewusste Entscheidung für oder gegen eine Theorie oder Methode.

### Courses

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### Allocation of places

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Descriptive statistics, correlations and the comparison of two or several mean values are basic methods of data analysis. This course will acquaint students with advanced statistical methods such as repeated-measures one and multiple-way analysis of variance, process and conjoint analysis, and exploratory as well as confirmatory factor analysis. Each session will include examples of applications and will provide students with an insight into the numerous capabilities of different methods of data analysis. At the end of the semester, students will sit a graded written examination.

### Intended learning outcomes

German intended learning outcomes available but not translated yet.

Nach der Teilnahme an diesem Module kennen die Studierenden fortgeschrittene Methoden der Statistik und können diese in wissenschaftlichen Texten verstehen und einordnen. Die Studierenden sind in der Lage die Methoden bezüglich Vor- und Nachteile gegenüberzustellen um für eine spezifische Problemstellung die geeignetste Methode auszuwählen. Des weiteren beherrschen sie die Grundschritte der Anwendung dieser Methoden.

### Courses

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### Allocation of places

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### Additional information

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**Contents**

The productivity paradox suggests that an increase in investment in information technology leads to hardly any noticeable increase in the overall level of productivity of a business. This is not true, however, if the focus is on investment in humans. When introducing standard software in organisations, there are numerous aspects to be considered. This module will focus on three areas: usability management during the introduction of software, the planning and running of user training courses, and organisational change management. Using the example of the introduction of enterprise resource planning (ERP) systems such as SAP software, this module will discuss procedures and success factors.

**Intended learning outcomes**

German intended learning outcomes available but not translated yet.


**Courses**

(type, number of weekly contact hours, language — if other than German)

S (2)

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) presentation (approx. 30 minutes) with handout (approx. 2 pages) or b) term paper (approx. 15 pages)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

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**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)

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Module title | Abbreviation
---|---
Human-Technology-Society | 06-HCI-MTG-152-m01

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**Contents**

German contents available but not translated yet.


**Intended learning outcomes**

German intended learning outcomes available but not translated yet.


**Courses** (type, number of weekly contact hours, language — if other than German)

S (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) presentation (approx. 30 minutes) with handout (approx. 2 pages) or b) term paper (approx. 15 pages)

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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**Contents**
No information on contents available.

**Intended learning outcomes**
No information on intended learning outcomes available.

**Courses**
(1)

**Method of assessment**
(type, scope, language — if other than German)

- report (approx. 15 pages)
  Language of assessment: German and/or English
  creditable for bonus

**Allocation of places**
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**Additional information**
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**Referred to in LPO I**
(examination regulations for teaching-degree programmes)
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### Module title

| HCI Seminar                  | 06-HCI-Sem-152-m01 |

### Module coordinator

unknown

### Module offered by

Institute of Human Computer Media

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### Duration

1 semester

### Module level

graduate

### Other prerequisites

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### Contents

Sound research requires an in-depth reflection of prior approaches and the related work typically published in the scientific media (conference proceedings, journals, books, etc.). This course is an advanced course about typical scientific research work with a specific focus on topics from the field of human-computer interaction (HCI). During the course, students will have to work on one specific topic as a preparation for their master thesis. They will have to find relevant publications, read the publications and analyze them given some defined research questions and/or categories of the current state-of-the-art. They have to summarize and present their findings to a larger audience.

### Intended learning outcomes

After the course, the participants will have a solid understanding of an important aspect of typical research work. They will have learned how to read scientific publications, how to extract relevant information, and how to summarize their findings.

### Courses

(type, number of weekly contact hours, language — if other than German)

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### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

| talk (approx. 30 minutes) |
| Language of assessment: German and/or English creditable for bonus |

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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**Contents**

Presentation and communication are important skills for application-oriented and practical aspects of various sciences. This is specifically true for Human-Computer Interaction (HCI). This course requires the participants to present the results of an associated project to a larger audience in a and exhibition-like setup.

**Intended learning outcomes**

The participants will learn how to present their own work to a larger audience, how to plan, design and set-up the different parts of an own exhibition booth, and how to react individually to questions from the audience.

**Courses**

(type, number of weekly contact hours, language — if other than German)

S (0.5)

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

presentation of project results (approx. 10 minutes)
Language of assessment: German and/or English creditable for bonus

**Allocation of places**

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**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)

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**Contents**

Practical experience is an important skill and source of information for application-oriented aspects of various sciences and the related job descriptions. This is also true for Human-Computer Interaction (HCI). This course requires the participants to take part in an internship either in the academic field or in the industry.

**Intended learning outcomes**

The participants will learn how potential future jobs and employments will be characterized and what kind of qualifications will be expected from them.

**Courses** (type, number of weekly contact hours, language — if other than German)

P (0)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

report on practical course (approx. 2 pages)
Language of assessment: German and/or English

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

--
Compulsory Electives
(20 ECTS credits)
### Module Catalogue for the Subject
**Human-Computer-Interaction**

**Master's with 1 major, 120 ECTS credits**

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### Contents

German contents available but not translated yet.


### Intended learning outcomes

German intended learning outcomes available but not translated yet.


### Courses (type, number of weekly contact hours, language — if other than German)

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### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I (examination regulations for teaching-degree programmes)

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**Contents**

German contents available but not translated yet.


**Intended learning outcomes**

German intended learning outcomes available but not translated yet.


**Courses** (type, number of weekly contact hours, language — if other than German)

| S (2) |

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

--

**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

--
### Module Catalogue for the Subject
**Human-Computer-Interaction**

**Master's with 1 major, 120 ECTS credits**

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- **ECTS**: 5
- **Method of grading**: numerical grade
- **Only after succ. compl. of module(s)**: --
- **Duration**: 1 semester
- **Module level**: graduate
- **Other prerequisites**: --

### Contents

German contents available but not translated yet.


### Intended learning outcomes

German intended learning outcomes available but not translated yet.


### Courses

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### Method of assessment

- a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

--
Module title | Abbreviation
--- | ---
Specialisation HCI 2 | 06-HCI-VHCI-2-152-m01

Module coordinator | Module offered by
unknown | Institute of Human Computer Media

ECTS | Method of grading | Only after succ. compl. of module(s)
--- | --- | ---
5 | numerical grade | --

Duration | Module level | Other prerequisites
--- | --- | ---
1 semester | graduate | --

Contents

German contents available but not translated yet.


Intended learning outcomes

German intended learning outcomes available but not translated yet.


Courses (type, number of weekly contact hours, language — if other than German)

S (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

Allocation of places

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Additional information

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Referred to in LPO I (examination regulations for teaching-degree programmes)

--
Module title | Abbreviation
--- | ---
Advanced Interactive Systems | 10-HCI-AIS1-152-m01

Module coordinator | Module offered by
--- | ---
holder of the Chair of Computer Science IX | Institute of Computer Science

| ECTS | Method of grading | Only after succ. compl. of module(s) |
--- | --- | ---
5 | numerical grade | -- |

| Duration | Module level | Other prerequisites |
--- | --- | ---
1 semester | graduate | -- |

Contents
This module discusses requirements, concepts and practical solutions in the area of interactive systems. A special focus is on systems concentrating on human-computer interaction. Typical examples include graphical user interfaces, web-based solutions or even systems from augmented and virtual reality. The course concentrates on systems in which users and computers form a closed input-output loop and requirements of reactivity and real-time performance are decisive.

Intended learning outcomes
At the end of the course, students will have a thorough knowledge of the requirements of interactivity. They will be able to identify and analyse technical capabilities and properties of today’s computer systems with respect to interactivity as well as to derive the necessary actions to achieve interactivity. Students will have learned to choose appropriate solutions and tools for various development tasks in this area. Having been equipped with a theoretical foundation, students will be able to develop alternative solutions for future systems.

Courses (type, number of weekly contact hours, language — if other than German)
S (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)
Language of assessment: German and/or English creditable for bonus

Allocation of places
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Additional information
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**Contents**

This module discusses specific requirements, concepts and solutions in the area of interactive systems in more detail. A special focus is on systems concentrating on human-computer interaction. Typical examples include graphical user interfaces, web-based solutions or even systems from augmented and virtual reality. The course concentrates on systems in which users and computers form a closed input-output loop and requirements of reactivity and real-time performance are decisive.

**Intended learning outcomes**

At the end of the course, students will have an advanced knowledge of the requirements of interactivity. They will be able to identify and analyse technical capabilities and properties of today's computer systems with respect to interactivity as well as to derive the necessary actions. Students will have learned to choose appropriate solutions and tools for various development tasks in a broad range of applications. Having been equipped with a theoretical foundation, students will be able to develop alternative solutions for future systems.

**Courses**

(type, number of weekly contact hours, language — if other than German)

S (2)

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

--

**Additional information**

--

**Referred to in LPO I**

(examination regulations for teaching-degree programmes)

--
Module title | Abbreviation
---|---
Advanced Usability | 06-HCI-UM-152-m01

Module coordinator | Module offered by
unknown | Institute of Human Computer Media

ECTS | Method of grading | Only after succ. compl. of module(s)
---|---|---
5 | numerical grade | --

Duration | Module level | Other prerequisites
---|---|---
1 semester | graduate | --

Contents

German contents available but not translated yet.


Intended learning outcomes

German intended learning outcomes available but not translated yet.

Nach der Teilnahme an diesem Modul verstehen die Studierenden die Prinzipien ausgewählter Usability Methoden und Domänen und sind in der Lage selbst Benutzungsschnittstellen zu gestalten sowie Studien durchzuführen, um Fragestellungen aus dem Bereich der Mensch-System Interaktion zu untersuchen. Des weiteren können sie die Vor- und Nachteile verschiedener Methoden abschätzen und empirische Studien sowie Gestaltungslösungen beurteilen und kritisch hinterfragen.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)Language of assessment: German and/or English creditable for bonus

Allocation of places

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Additional information

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Referred to in LPO I (examination regulations for teaching-degree programmes)

--
### Module title
Advanced Human Factors

### Abbreviation
06-HCI-HF-152-m01

### Module coordinator
unknown

### Module offered by
Institute of Human Computer Media

### ECTS
5

### Method of grading
numerical grade

### Only after succ. compl. of module(s)
--

### Duration
1 semester

### Module level
graduate

### Other prerequisites
--

### Contents
German contents available but not translated yet.


### Intended learning outcomes
German intended learning outcomes available but not translated yet.

Nach der Teilnahme an diesem Modul verstehen die Studierenden die Prinzipien ausgewählter Human Factors Methoden und Domänen und sind in der Lage selbst Studien durchzuführen, um Fragestellungen aus dem Bereich der Mensch-System Interaktion zu untersuchen. Des weiteren können sie die Vor- und Nachteile verschiedener Methoden abschätzen und empirische Studien beurteilen und kritisch hinterfragen.

### Courses
(type, number of weekly contact hours, language — if other than German)
S (2)

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English

### Allocation of places
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### Additional information
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### Contents

German contents available but not translated yet.

In diesem Modul werden vertieft Inhalte, Methoden und Anwendungen der User Experience Forschung gelehrt, also der Gestaltung von Mensch-Computer-Systemen hinsichtlich eines guten Erlebens der Benutzer. Anwendungsbeispiele kommen dabei aus dem öffentlichen und privaten Raum, beinhalten z.B. Kundenzufriedenheit, Persuasive Interfaces, Ästhetische Gestaltung und Service Design.

### Intended learning outcomes

German intended learning outcomes available but not translated yet.

Nach der Teilnahme an diesem Modul verstehen die Studierenden die Prinzipien ausgewählter User Experience Methoden und Domänen und sind in der Lage selbst Benutzungsschnittstellen zu gestalten sowie Studien durchzuführen, um entsprechende Fragestellungen aus dem Bereich der Mensch-System Interaktion zu untersuchen. Des weiteren können sie die Vor- und Nachteile verschiedener Methoden abschätzen und empirische Studien sowie Gestaltungslösungen beurteilen und kritisch hinterfragen.

### Courses

(type, number of weekly contact hours, language — if other than German)

| S (2) |

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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## Module Catalogue for the Subject Human-Computer-Interaction

**Master's with 1 major, 120 ECTS credits**

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### Contents

This course discusses typical concepts of computer science. This is a dummy module allowing students to have a computer science module of their choice accredited.

### Intended learning outcomes

According to the specification of the imported module.

### Courses

(type, number of weekly contact hours, language — if other than German)

| S (2) |

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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### Module coordinator

| holder of the Chair of Computer Science IX |
| Institute of Computer Science |

### ECTS

| 5 |

### Method of grading

| numerical grade |

### Only after succ. compl. of module(s)

| -- |

### Duration

| 1 semester |

### Module level

| graduate |

### Other prerequisites

| -- |

### Contents

This course discusses the theoretical fundamentals of computer science. This is a dummy module allowing students to have a computer science module of their choice accredited.

### Intended learning outcomes

According to the specification of the imported module.

### Courses (type, number of weekly contact hours, language — if other than German)

| S (2) |

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I (examination regulations for teaching-degree programmes)

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<tbody>
<tr>
<td>Module title</td>
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<tr>
<td>Computer Sciences III - Application</td>
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<table>
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<tbody>
<tr>
<td>holder of the Chair of Computer Science IX</td>
<td>Institute of Computer Science</td>
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<tbody>
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**Contents**

This course discusses the fundamental principles of applications of computer science. This is a dummy module allowing students to have a computer science module of their choice accredited.

**Intended learning outcomes**

According to the specification of the imported module.

**Courses** (type, number of weekly contact hours, language — if other than German)

S (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

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**Additional information**

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<td>Computer Sciences IV - Praxis</td>
<td>10-HCI-Info4-152-m01</td>
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### Contents
Planning, probabilistic closure and Bayesian networks, utility theory and decidability problems, learning from observations, knowledge while learning, neural networks and statistical learning methods, reinforcement learning, processing of natural language, image processing.

### Intended learning outcomes
The students possess theoretical and practical knowledge about artificial intelligence in the area of probabilistic closure, learning and language/image processing and are able to assess possible applications.

### Courses
(type, number of weekly contact hours, language — if other than German)

| S | (2) |

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

### Allocation of places
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### Additional information
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<td>Selected Topics of Computer Science</td>
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**Contents**

Selected topics in computer science.

**Intended learning outcomes**

The students are able to understand the solutions to complex problems in computer science and to transfer them to related questions.

**Courses** (type, number of weekly contact hours, language — if other than German)

| S (2) |

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 75 minutes) or b) presentation (approx. 20 minutes) with handout (approx. 2 pages) or c) presentation of project results (approx. 20 minutes) or d) term paper (approx. 10 pages) or e) a total of approx. 5 hours of completing exercises or f) oral examination (approx. 25 minutes)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

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**Additional information**

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<table>
<thead>
<tr>
<th>Module title</th>
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<td>Psychological Diagnostics and Test Theory</td>
<td>06-HCI-DTT-152-m01</td>
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<tr>
<th>Module coordinator</th>
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<tbody>
<tr>
<td>holder of the Professorship of Differential Psychology</td>
<td>Institute of Psychology</td>
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**Contents**

Participants will learn (1) approaches for scientific and professional psych-diagnostics decision making, (2) methods and approaches for observing intra-individual differences using observations, interviews, tests, and questionnaires, (3) the presentation of the respective results in reports, and (4) receive an introduction to classic and stochastic test theory.

**Intended learning outcomes**

Participants will learn to collect and present psycho diagnostic results based on observations, interviews, tests, and questionnaires. This includes methods of analyzing results of existing test and questionnaires and also the development of tests using item, for example, item analysis and factor analysis. Furthermore, participants will gain experience in collecting standardized Tests such as personality tests.

**Courses** (type, number of weekly contact hours, language — if other than German)

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**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 120 minutes)

Modules offered will vary according to resources of research group Differentielle Psychologie, Persönlichkeitspsychologie und Psychologische Diagnostik (Differential Psychology, Personality Psychology and Psychological Diagnosis) at the Institute of Psychology

**Allocation of places**

max. 5 places. Should the number of applications exceed the number of available places, places will be allocated according to the number of subject semesters. Among applicants with the same number of subject semesters, places will be allocated by lot.

**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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<table>
<thead>
<tr>
<th>Module title</th>
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<td>Advanced Studies in Instructional Psychology</td>
<td>06-HCI-Instpsy-152-m01</td>
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<tr>
<td>holder of the Chair of Instructional Psychology and New Media</td>
<td>Institute of Human Computer Media</td>
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</table>

**Contents**
The module provides advanced knowledge of central theories and findings of instructional psychology and its relation to digital media. The course provides an overview of research on learning and instruction as well as instructional design.

**Intended learning outcomes**
Students acquire both expertise and practical skills that can be used for further steps in professional life. This includes advanced knowledge of theories, methods and findings of instructional media as well as basic knowledge concerning the application of instructional psychology when designing and evaluating technology-based learning environments.

**Courses** (type, number of weekly contact hours, language — if other than German)

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<tr>
<th>Type</th>
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**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) presentation (15 to 45 minutes) with written elaboration (10 to 15 pages) or d) term paper (15 to 20 pages) or e) portfolio (maximum 20 pages)

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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### Module title  
Methods 2  

### Abbreviation  
06-MK-ME2-152-m01

### Module coordinator  
all four core Professorships of the degree programme Medienkommunikation (Media Communication)

### Module offered by  
Institute of Human Computer Media

### ECTS  
5

### Method of grading  
numerical grade

### Duration  
1 semester

### Module level  
graduate

### Other prerequisites  
--

### Contents

This module discusses advanced techniques of data collection. Students should obtain an overview of different data collection techniques that are used in media communication research. Based on the knowledge of common data collection techniques (e.g. written surveys), this module covers i.a. innovative techniques such as eye tracking or physiological measures.

### Intended learning outcomes

Students should acquire a profound knowledge of the data collection techniques discussed and should deepen their methodological skills. In addition, students should become acquainted with innovative data collection techniques.

### Courses (type, number of weekly contact hours, language — if other than German)

S (2)

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) presentation (15 to 45 minutes) with written elaboration (10 to 15 pages) or d) term paper (15 to 20 pages) or e) portfolio (maximum 20 pages) or f) completion of exercises on a regular basis (approx. 60 hours)

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO I (examination regulations for teaching-degree programmes)

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<table>
<thead>
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<td>Work experience as a research and teaching assistant</td>
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<tbody>
<tr>
<td>chairperson of examination committee of the Master's degree programme Human-Computer Interaction</td>
<td>Institute of Human Computer Media</td>
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### Contents

The students have to individually work as tutors (research and/or teaching assistants) in the scope of the bachelor program Mensch-Computer Systeme (MCS) and/or the master program Human-Computer Interaction (HCI). The tasks will be individually defined from the range of individual tasks typically associated with academic work in the field.

### Intended learning outcomes

Competencies will span two areas. Working as a teaching assistant, participants will learn how to teach others about HCI topics. They will gain a better understanding on the problems students may face during learning. Working as a research assistant, participants will gain first-hand as well practical experience on the methodology of scientific work.

### Courses

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<th>Type, number of weekly contact hours, language — if other than German</th>
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### Method of assessment

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<td>report (approx. 2 pages)</td>
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### Allocation of places

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### Additional information

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### Referred to in LPO 1 (examination regulations for teaching-degree programmes)

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Thesis
(30 ECTS credits)
### Module title

**HCI Master's Thesis**

### Abbreviation

06-HCI-Abschl-152-m01

### Module coordinator

unknown

### Module offered by

Institute of Human Computer Media

### ECTS

30

### Method of grading

Numerical grade

### Only after succ. compl. of module(s)

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### Duration

Graduate

### Module level

Graduate

### Other prerequisites

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## Contents

The students have to individually work on an assigned problem in the field of Human-Computer Interaction and document their results using good scientific standards.

## Intended learning outcomes

Participants will learn how to apply scientific methods from the HCI field. They will learn a structured approach starting from a definition and motivation of research questions and the discussion and summery of related work from scientific publications and prior approaches. Following this they will learn how to develop own concepts and methods to tackle the questions and how to implement them and potentially to evaluate the results.

## Courses

No courses assigned to module

## Method of assessment

- **Type:** written thesis (approx. 50 to 90 pages)
- **Scope:** approx. 50 to 90 pages
- **Language:** German and/or English

## Allocation of places

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## Additional information

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## Referred to in LPO 1

(examination regulations for teaching-degree programmes)

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