Technology Arts Sciences
TH Köln

Course Manual MCI

Human Computer Interaction

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─ General information

Long name	Human Computer Interaction
Approving CModule	MCI_MaMT, MCI_MaTIN
Responsible	Prof. Dr.-Ing. Arnulph Fuhrmann Professor Fakultät IME
Valid from	summer semester 2021
Level	Master
Semester in the year	summer semester
Duration	Semester
Hours in self-study	78
ECTS	5
Professors	Prof. Dr.-Ing. Arnulph Fuhrmann Professor Fakultät IME Prof. Dr. Stefan Grünvogel Professor Fakultät IME Prof. Dr.-Ing. Luigi Lo Iacono ehemaliger Professor Fakultät IME
Requirements	none
Language	German, English if necessary
Separate final exam	Yes

Literature

A. M. Heinecke: Mensch-Computer-Interaktion, Basiswissen für Entwickler und Gestalter, 2. Auflage, Springer, 2011

S. Krug: Don't Make Me Think!: A Common Sense Approach to Web Usability, 2. Auflage, New Riders, 2005)

A. Dix, J. Finlay, G. D. Abowd, R. Beale: Human-Computer Interaction, 3. Auflage, Pearson, 2004

A. Cooper: About Face 3: The Essentials of Interaction Design, 3. Auflage, Wiley 2007

B. Shneiderman, C. Plaisant: Designing the User Interface: Strategies for Effective Human-Computer Interaction, Addison Wesley, 2009

E. R. Tufte: Envisioning Information, Graphics Press, 1990

H. Loranger, J. Nielsen: Web Usability, Addison-Wesley, 2008

J. Lazar, J.H. Feng, H. Hochheiser, Research Methods in Human-Computer-Interaction, Wiley, 2012

Final exam

Details	In a project in a team, an interactive artefact is created, scientific questions (also in the field of usability) are set up and examined with the corresponding methods. For example, online booking systems, technical devices and interfaces can be developed. The results will be presented to an audience of experts an a during the elaboration or presentation of the project and documented in an form of an scientific paper.

If there is a large number of participants, a written examination may also be used as a form of examination. |
| **Minimum standard** | The students show that they can apply basic aspects in the development of user interfaces. They are able to apply simple methods of interface evaluation and interpret them accordingly. They are able to reflect on their own approach and to document the results professionally. You take into account the rules of good scientific practice. |
| **Exam Type** | EN schriftlicher Ergebnisbericht |

– Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	Models and design principles of interactive systems Principles of context-, task- and user-oriented development of interactive systems Basics of barrier-free access to interactive systems Relevant standards and guidelines: EN ISO 9241, ISO 14915, HHS Control options: Dedicated input/output devices, voice control, gesture control Best Practices and Style Guides: Desktop / Web / Mobile / Hybrid Applications Usability evaluation (analytical/empirical, heuristics, expert interviews, focus groups, user studies) Evaluation methods (thinking aloud, eye-tracking, (semi-)structured interviews) Experimental Research: Research Question, Hypotheses, Errors of 1st and 2nd Kind Experiment Design: Between Group, Within Group, Split-Plot, Reliability of Experimental Results Statistical analysis: scale levels, descriptive statistics, T-tests, ANOVA, regression, correlation Surveys: sampling and sample selection, sources of error, questionnaires, evaluation of surveys
Skills	Organizing and carrying out development tasks Design of user interfaces with special consideration of MCI principles Implementation of user interfaces Implementation of user studies Design processes for interactive applications

Expenditure classroom teaching

Type	Attendance (h/Wk.)

Special requirements

Accompanying material	electronic lecture slides for the lecture
Separate exam	No

Lecture	2
Tutorial (voluntary)	0

− Practical training

Learning goals

Goal type	Description
Skills	Capturing and understanding textual tasks Recording tasks and creating models from them Implementing UI components on the basis of the models created Testing and securing developments Checking and evaluating work results of comolitons Applying MCI research methods and terminology

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	1
Tutorial (voluntary)	0

Special requirements

Knowledge of programming and web standards

Accompanying material	electronic lecture slides for the lecture electronic colleciton of exercises
Separate exam	Yes

Separate exam

Exam Type	EN Übungsaufgabe mit fachlich / methodisch eingeschränktem Fokus lösen
Details	Presence exercise and self-learning tasks
Minimum standard	The tasks are solved independently and the students can explain the results of their work. Active participation in the discussion of tasks

— Lecture / Exercises

Learning goals

Goal type	Description
Skills	Organize and carry out development tasks. Design of user interfaces under special consideration of MCI principles: Determination of context-. Task and user requirements, selection of UI technologies for a specific task, handling and classification of UI technologies and procedures. Implementation of user interfaces: Design and development of user interfaces for a concrete task, desktop applications, web applications, mobile applications, hybrid applications, functional testing of user interfaces Carrying out user studies, e.g. Think-Aloud Tests, Eye-Tracking, Mouse-Tracking, Questionnaires Evaluation of user studies (SPSS) and documentation

Special requirements

Accompanying material	undefined
Separate exam	No

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Project	1
Tutorial (voluntary)	0