



Ruhr Master School
of Applied Sciences

Dieses Wahlpflichtmodul ist ein Angebot der:

**Fachhochschule
Dortmund**

University of Applied Sciences and Arts

Master Digital Transformation

Usability Engineering

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Westfälische
Hochschule
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STIFTUNG
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Usability Engineering (MOD2-01)					
Code Number	Workload	Credits	Semester	Frequency	Duration
48060/61	180 h	6	2	summer semester	1 Semester
1	Course Title Usability Engineering	Contact hours 4 SWS / 60 h	Self-Study 120 h	Planned Group Size 25 students	
2	Course Description <p>The course Usability Engineering is focusing on the essential methods and tools to evaluate and measure the effectiveness, efficiency and the joy of use with which a user and perform a task with a given system. The reoccurring scheme throughout the course is the User Centered Design Process. Students will learn how to observe and specify a context of use, derive requirements from it, create a prototype and evaluate it. For all those parts of the processes specific tools and methods will be introduced, for different phases during the software development. Students will learn about the work in the area of usability engineering from a theoretical viewpoint, by studying state-of-the-art research publications, as well as from a practical point of view, by project examples and case studies. These methods and tools will be applied as well as critically evaluated and checked for potential of improvement.</p>				
3	Course Structure <ol style="list-style-type: none"> 1. Introduction <ol style="list-style-type: none"> a. Motivation b. Definition Usability Engineering 2. Processes <ol style="list-style-type: none"> a. Usability Engineering -Processes b. Integration into IT-projects c. Potential conflicts d. Communicating Usability 3. Usability Engineering Tools and Methods <ol style="list-style-type: none"> a. Analyzing context of use b. Requirements management c. Concepts d. Evaluation 4. Additional topics: Coordinated with the student's interests one to three of the following topics will be chosen. The list will be adapted to take changes in the state of the art into account. <ol style="list-style-type: none"> a. Mobile Computing b. Individual software solutions c. Consumer- vs. Business-Software d. Industrial solutions 				
4	Application Focus <p>Block workshop: students attend an interdisciplinary one-week workshop where they apply the Usability Tools and Methods for an industry case (potentially together with EuroMPM, Master</p>				

	ESM and Master Computer Science), for example in an early project state with prototyping or in a later project state with focus on evaluation and last changes
5	<p>Scientific Focus</p> <p>Students prepare a homework and a presentation on an individually selected topic from recent usability engineering research, related to the project they worked on during the block workshop for the application focus, including a reflection on the lessons learned from practice in comparison to research.</p>
6	<p>Parameters</p> <ul style="list-style-type: none"> • ECTS: 6 • Hours of study in total: 180 • Weekly hours per semester: 4 <ul style="list-style-type: none"> - Contact hours: 60 - Self-Study hours: 120 • Course characteristics: compulsory • Course frequency: every year – summer semester • Maximal capacity: 25 students • Course admittance prerequisites: none • Skills trained in this course: theoretical knowledge, practical skills and scientific competencies • Assessment of the course: Theoretical knowledge (40%): Written or oral Exam at the end of the course, Practical Skills (40%): realizing a small real-world project using usability engineering tools and methods during a block week and Scientific Competences (20%): written paper (literature review, approx. 10 pages) and presentation (in class or at a student conference, e.g. International Research Conference Dortmund) • Teaching staff: Prof. Dr. Christian Reimann, external lecturers from partner universities, e.g. Prof. Dr. Rimante Hopiene (Technische Universität Kaunas, KTU, Litauen)
7	<p>Learning outcomes</p> <p>7.1 Knowledge</p> <ul style="list-style-type: none"> • Knows relevant theoretical foundations of usability engineering • Knows established usability engineering tools and methods (AB-Tests, GOMS, Interviews, Usability-Lab Tests, Remote-Tests, etc.) • Knows the applicability of those tools and methods in a given project situation • Knows communication concepts for different target groups (professional peers, user groups, management, etc.) <p>7.2 Skills</p> <ul style="list-style-type: none"> • Can observe, recognize and evaluate user behavior and behavioral patterns (e.g. analyzing video protocols from user tests) • Can analyze context of use, derive requirements, prototype and evaluate a software system • Can adapt and improve those methods and tools for new application areas • Can develop communication concepts for new/adapted target groups <p>7.3 Competence – attitude</p> <ul style="list-style-type: none"> • Can provide a self-reliant evaluation of the recent research in a (small) given area • Can relate and evaluate the methods and tools into the recent scientific publications

	<ul style="list-style-type: none"> • Can critically reflect behavior (own and well as others) in general, as well as in a given situation
8	<p>Teaching and training methods</p> <ul style="list-style-type: none"> • Theoretical knowledge: e-learning modules and (live-)video lectures on usability engineering • Practical Skills: Projects, Labs & Exercises, block week with selected tools and methods • Scientific Competences: student research group on usability engineering
9	<p>Course mapping</p> <p>Input for:</p> <ul style="list-style-type: none"> • Research Project Thesis (MOD3-03) <p>Input from:</p> <ul style="list-style-type: none"> • Innovation Driven Software Engineering (MOD1-01) • R&D Project Management (MOD1-04) • Scientific & Transversal Skills 1 (MOD1-05)
10	<p>References</p> <p><u>Basics</u></p> <p>Jakob Nielsen, Usability Engineering, Elsevier, 1994</p> <p>Don Norman, The design of everyday things: Revised and Expanded Edition, Basic Books, 2013</p> <p><u>Practitioner</u></p> <p>Carol M. Barum, Usability Testing Essentials, Elsevier, 2010</p> <p>Jeffrey Rubin and Dana Chisnell, Handbook of Usability Testing: Howto Plan, Design, and Conduct Effective Tests, Wiley, 2008</p> <p>Steve Krug et al, Rocket Surgery Made Easy: The Do-it-yourself Guide to Finding and Fixing Usability Problems (Voices That Matter), New Riders, 2009</p> <p>Steve Krug, Don't Make Me Think: A Common Sense Approach to Web Usability (Voices That Matter), New Riders, 2013</p> <p>The UX Book: Agile UX Design for a Quality User Experience, Morgan Kaufmann, 2019</p> <p>Usability Assessment: How to Measure the Usability of Products, Services, and Systems, Human Factors and Ergonomics Society, 2016</p> <p><u>Research (Journals and Conferences)</u></p> <ul style="list-style-type: none"> • ACM SIGCHI, https://dl.acm.org/sig/sigchi/publications • MobileHCI, e.g. MobileHCI '19: Proceedings of the 21st International Conference on Human-Computer Interaction with Mobile Devices and Services • ETRA, e.g. ETRA '19: Proceedings of the 11th ACM Symposium on Eye Tracking Research & Applications • Proceedings of the ACM on Human-Computer Interaction • IEEE Transactions on Human-Machine Systems