

Module Handbook

Smart Interactive Media

Bachelor of Science (B.Sc.)

Valid for the Study and Examination Regulation SIM 2026-06
Valid for WiSe 26/27



Module Handbook

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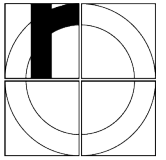
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Programming I

Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-1	4	5	1 st Semester	Winter	1 Semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Basic programming concepts and algorithms - How programming languages evolved and resulting implications for future developments <u>(B) Understand:</u> - The role of programmers in complex modern software development processes - Distinguish between various classes of programming languages and choose appropriate ones <u>(C) Apply:</u> - Use various programming concepts to create algorithms that solve various problems - Create basic interactive software applications that users can interact with <u>(D) Analyze:</u> - Analyze source codes to assess their quality and to solve code issues <u>(E) Evaluate:</u> - Perform assessments of software development projects through the lenses of common processes				
3	Course contents - Introduction to programming as a discipline - Programming languages and their historical development - Imperative programming using the example of Python - Overview of typical control and data structures and algorithms - Hands-on coding experience				
4	Teaching methods Lecture by instructor and guest speakers, games, team work, student presentations, case studies				
5	Prerequisites None				
6	Methods of assessment [Written exam (45-90 min) and coursework (4 – 8 weeks)] or oral examination (20-40 min) or coursework (5 – 10 weeks)				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Dr. Sebastian Feger				
8	Reading list Martin, R. C. (2008): Clean Code: A Handbook of Agile Software Craftsmanship. Prentice Hall. Thomas, D. and Hunt, A. (2019): The Pragmatic Programmer: your journey to mastery, 20th Anniversary Edition. Addison Wesley Warner, A. (2020): Python for Absolute Beginners: A Step by Step Guide to Learn Python Programming from Scratch, with Practical Coding Examples and Exercises. Independently published.				

XR I: Extended Reality Foundations

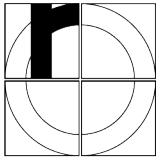
Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-2	4	5	1 st Semester	Winter	1 Semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Key concepts of XR, immersion, presence, embodiment - Perceptual foundations of spatial experiences, human factors, and associated challenges <u>(B) Understand:</u> - Technical basis of XR and its design implication - Principles of spatial interaction design and how they differ from screen-based interaction - Ethical, accessibility, and data-protection implications of XR <u>(C) Apply:</u> - Design spatial user interfaces & implement an XR application in a game engine - Human-centered design process from initial concept to testable prototype <u>(D) Analyze:</u> - Existing XR applications with respect to presence, comfort, interaction quality, and accessibility - Usability/UX, human factors, and comfort in applications/prototypes <u>(E) Evaluate:</u> - Usability/UX, presence, human factors, and simulator sickness of XR applications - Suitability of a XR technology for a specific application context and user group				
3	Course contents - Foundations of XR: reality–virtuality continuum, VR/AR/MR, formats, hardware, and display and tracking technologies; perception, presence, immersion; comfort, cybersickness, & accessibility - Building XR: Spatial interaction design and development with game engines such as Unity, 3D user interfaces, and AR/MR in physical space, 3D assets, rendering and performance, spatial audio and haptics, deployment to headsets - UX, human-centered design, prototyping, and evaluation methods for XR - Social presence, ethics and data protection, application fields and current developments				
4	Teaching methods Lecture, discussion, team work, student presentations, case studies				
5	Prerequisites None				
6	Methods of assessment [Written exam (45-90 min) and coursework (4 – 8 weeks)] or oral examination (20-40 min) or coursework (5 – 10 weeks)				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Dr. Lukas Flohr				
8	Reading list Jerald, J. (2015). <i>The VR Book: Human-Centered Design for Virtual Reality</i> . Association for Computing Machinery; Morgan & Claypool.				



	Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. <i>IEICE Transactions on Information Systems</i> , E77-D(12), 1321–1329.
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3D Design Foundations

Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-3	4	5	1st Semester	Winter	1 Semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Recall essential terminology and principles of 3D coordinate systems, topology, UV mapping, physically based rendering, digital capture, real-time rendering, and cinematic presentation. <u>(B) Understand:</u> - Explain how geometry, materials, lighting, cameras, USD interoperability, photogrammetry, and Gaussian splatting interact within a professional 3D production pipeline. <u>(C) Apply:</u> - Model, sculpt, optimize, texture, capture, assemble, light, and render a coherent real-time 3D scene using Blender, Substance 3D Painter, capture tools, and Unreal Engine. <u>(D) Analyze:</u> - Diagnose topology, UV, baking, scale, coordinate-system, material, capture, lighting, and rendering problems and select appropriate corrective workflows. <u>(E) Evaluate:</u> - Justify technical and aesthetic decisions by balancing visual quality, performance, interoperability, realism, and atmospheric storytelling.				
3	Course contents 3D foundations and asset creation: coordinate systems, USD workflows, subdivision-surface modeling, clean topology, digital sculpting, and organic surface detail - Material production: UV unwrapping, high-to-low-poly baking, PBR map systems, procedural texturing in Substance 3D Painter, and AI-assisted seamless texture generation - Reality capture and cinematography: photogrammetry, Gaussian splatting, camera optics, composition, depth of field, and the comparison of mesh-based and neural representations - Real-time production and synthesis: Unreal Engine scene assembly, materials, Lumen lighting, fog and post-processing, Sequencer, Movie Render Queue, and a documented cinematic master-scene project				
4	Teaching methods Seminar-based instruction (SU), practical exercises (Ü), project work (PA), flipped-classroom preparation, software demonstrations, guided laboratory work, peer critique, production reviews, and student presentations				
5	Prerequisites None				
6	Methods of assessment Written examination (60-120 min) or oral examination (15-45 min) or coursework (PStA)				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Sebastian Hirsch				
8	Reading list Akenine-Möller, T., Haines, E., Hoffman, N., Pesce, A., Iwanicki, M., & Hillaire, S. (2018): Real-Time Rendering (4th Ed.). CRC Press.				



Pharr, M., Jakob, W., & Humphreys, G. (2023): Physically Based Rendering: From Theory to Implementation (4th Ed.). MIT Press.

Blender Foundation: Blender Manual (latest version). EPUB:
https://docs.blender.org/manual/en/latest/blender_manual_epub.zip

Epic Games (2026): Unreal Engine 5.8 Documentation. Epic Developer Community.

Adobe (2026): Substance 3D Painter Documentation. Adobe Experience League.

Marketing

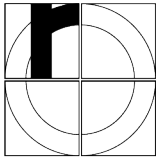
Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-4	4	5	3 rd Semester	Each winter term	1 semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Describe fundamental marketing concepts and strategies, e.g. the 4 P's, SEO, SEM, Affiliate marketing - Depict particularities of consumer behavior in B2C and B2B settings <u>(B) Understand:</u> - Understand the advantages, disadvantages, opportunities, and tradeoffs involved in different marketing strategies and choices, with particular focus on digital marketing and e-commerce - Recognize the underlying ideas and principles around segmenting, targeting and positioning <u>(C) Apply:</u> - Apply fundamental marketing terms, concepts, principles, and theories and their effective applications to real-world situations in digital business and e-commerce <u>(D) Analyze:</u> - Effectively collaborate to analyze marketing options and develop a marketing plan <u>(E) Evaluate:</u> - Make judgments about questionable marketing practices by using ethical decision frameworks that ensure the implementation of conscious, sustainable marketing practices - Articulate and contrast current challenges and opportunities for marketing, arising from globalization, digitalization and most impactful mega trends				
3	Course contents - Marketing Strategy, Marketing Plan & Marketing Environment, Global Marketing - Conscious Marketing - Marketing Research, Marketing Analytics & Tracking, Consumer Behavior - The 4 P's: Products & Services, Pricing Decisions, Distribution, Marketing Communications - Branding: Brand Strategy & Branding Decisions - Digital Marketing: Online, Social, and Mobile				
4	Teaching methods Lecture, discussion, team work, student presentations, case studies				
5	Prerequisites None				
6	Methods of assessment Written exam 60-120 min or oral examination 15-45 min or coursework				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Dr. Martin Fleischmann				
8	Reading list Grewal, D. and Levy, M. (2023): M: Marketing, 8th edition. Jobber, D. and Ellis-Chadwick, F. (2023): Principles and Practice of Marketing, 10th edition.				

Sketching with Hardware I

Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-5	4	5	1 st Semester	Winter	1 Semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Recall the core concepts, terminology, and components of physical computing, embedded systems, and tangible interfaces <u>(B) Understand:</u> - Compare design approaches, architectures, protocols, and fabrication methods to select appropriate technologies for different applications <u>(C) Apply:</u> - Design, implement, and test interactive embedded systems using (virtual) microcontrollers, sensors, actuators, and digital fabrication tools <u>(D) Analyze:</u> - Identify technical constraints, debugging strategies, and trade-offs when designing reliable physical computing solutions <u>(E) Evaluate:</u> - Justify design decisions by balancing user experience, engineering constraints, and real-world application requirements				
3	Course contents - Fundamentals of physical computing, including embedded programming, electronics, microcontrollers, sensors, actuators, communication protocols, and system architecture - Design and implementation of interactive hardware prototypes using MicroPython/C, PCB design, digital fabrication, and rapid prototyping techniques - Development of connected and intelligent systems through IoT technologies, Edge AI, embedded machine learning, power management, signal processing, and debugging - Human-centered design of tangible interfaces, addressing user experience, iterative prototyping, security, privacy, and real-world applications through a semester-long project				
4	Teaching methods Lecture by instructor and guest speakers, projects, team work, student presentations, case studies				
5	Prerequisites None				
6	Methods of assessment [Written exam (45-90 min) and coursework (4 – 8 weeks)] or oral examination (20-40 min) or coursework (5 – 10 weeks)				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Dr. Sebastian Feger				
8	Reading list Monk, S. (2025): Learn Coding and Electronics with the Raspberry Pi Pico (2 nd Ed.). MonkMakes Press O'Sullivan, D., & Igoe, T. (2004): Physical computing: sensing and controlling the physical world with computers. Course Technology Press.				

Design & Gestalt

Module code	Weekly hours (SWS)	ECTS	Semester	Frequency	Duration
SIM-6	4	5	1st Semester	Winter	1 Semester
1	Instructional language English		Contact hours 60	Self-study 90	Total workload 150
2	Learning objectives After successful completion of this module, students will be able to: <u>(A) Remember:</u> - Recall core principles and terminology of Gestalt psychology, visual hierarchy, grids, proportion, color, contrast, semiotics, typography, accessibility, and interface affordance. <u>(B) Understand:</u> - Explain how perception, cognitive load, cultural context, visual form, typography, and feedback mechanisms influence interpretation and user behavior. <u>(C) Apply:</u> - Create and adapt visual communication systems across analog, print, branding, and interactive-media contexts using Figma and Adobe Creative Cloud tools. <u>(D) Analyze:</u> - Analyze layouts, images, brands, and interfaces using perceptual principles, information hierarchy, semiotics, typographic criteria, accessibility standards, and context-of-use evidence. <u>(E) Evaluate:</u> - Evaluate and defend design decisions objectively through iterative testing, peer critique, accessibility checks, contextual mockups, and a professional design presentation.				
3	Course contents - Perception and visual organization: Gestalt principles, figure-ground relationships, cognitive ease, visual hierarchy, eye movement, whitespace, and ideation methods - Structure and form: grid systems, Swiss design, proportion, aspect ratios, responsive constraints, shape semantics, line language, and cross-media adaptation - Color, imagery, and typography: color psychology, cultural coding, WCAG contrast, visual guidance, semiotics, framing, micro-typography, macro-typography, and type pairing - Interaction and synthesis: affordance, signifiers, feedback states, visual brand auditing, iterative prototyping, contextual mockups, and a documented guerilla-rebrand pitch				
4	Teaching methods Seminar-based instruction (SU), practical exercises (Ü), project work (PA), flipped-classroom preparation, analog and digital workshops, design-thinking activities, peer critique, usability testing, case studies, and student presentations				
5	Prerequisites None				
6	Methods of assessment Written examination (60-120 min) or oral examination (15-45 min) or coursework (PStA)				
7	Person(s) responsible for course contents / Person(s) teaching the course Prof. Sebastian Hirsch				
8	Reading list Lidwell, W., Holden, K., & Butler, J. (2023): Universal Principles of Design, Updated and Expanded (3rd Ed.). Rockport Publishers.				



	Lupton, E. (2024): Thinking with Type (3rd Ed., Revised and Expanded). Princeton Architectural Press. Meggs, P. B., Purvis, A. W., Maxa, S., & Sanders, M. (2025): Meggs' History of Graphic Design (7th Ed.). Wiley. Norman, D. A. (2013): The Design of Everyday Things (Revised and Expanded Ed.). Basic Books. Müller-Brockmann, J. (1981): Grid Systems in Graphic Design. Niggli.
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