AALBORG UNIVERSITET

STUDIEORDNING FOR KANDIDATUDDANNELSEN I MEDIALOGI, 2022, AALBORG

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MODULER SOM INDGÅR I STUDIEORDNINGEN

INDHOLDSFORTEGNELSE

ADAPTIVE MEDIA SYSTEMS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

Adaptive media systems can use machine learning/artificial intelligence techniques to model users and/or their interactions with the system so as to tailor the experience specifically to the user(-profile), or otherwise enhance the performance/efficacy of the system. This adaptivity can be a real-time process based on here-and-now data, e.g., slowing system progress down for a user who is deemed to be temporarily overloaded, or it can be part of a long term strategic process of harvesting and mining user interaction data to enhance system efficacy.

The objective of the module is to provide students with competences in synthesizing and evaluating methods for creating such adaptive media systems. By applying machine learning to harvested data, or by other explicit means of letting measurements/data control changes to the media experience (adaptation).

The module furthermore requires students to work according to a scientific method, and to report results in scientific forms, such as papers and posters.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge of common data types and collection thereof
- understanding of machine learning methods and their applicability in the context of adaptive media systems
- understanding of fundamental scientific methodology and hypothesis-driven research

SKILLS

Students who complete the module will be able to:

- apply scientific computing skills (e.g., Python, R) for collection, preprocessing and curation of user and usage data
- analyze the applicability and affordance of machine learning techniques, or other means of enabling adaptivity, in the context of adaptive media systems
- apply scientific methodology and techniques, including state-of-the-art review, hypothesis generation, and critical reporting in paper/poster format

With respect to Problem-Based Learning students will be able to:

- produce a project report according to norms of the area, take into consideration relevant literature, apply correct terminology and convey the research-based foundation, problem and results of the project orally and in writing in a coherent manner, including the relationship between the problem formulation, the project’s realization and its conclusions
- evaluate and select relevant literature, scientific methods and models and other tools for application in the project work, and evaluate the project’s problem area in a relevant scientific context

COMPETENCES

Students who complete the module will be able to:

- synthesize and evaluate adaptive media systems based on techniques such as machine learning, user behavioral data, etc.
- apply scientific methodology towards research in adaptive media systems, and the documentation/communication thereof

With respect to Problem-Based Learning students will be able to:

- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for carrying out, potentially cross-disciplinary, collaborations
- assume responsibility for own scientific development

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Adaptive Media Systems
Type of exam	Oral exam based on a project Oral exam based on a scientific paper written in English and a media-technological product, an AV-production illustrating and summarizing the project, a poster in English, and edited worksheets/portfolio documenting project details.
ECTS	15
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Adaptive mediesystemer
Module code	MSNMEDM1221
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	15
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MACHINE LEARNING FOR MEDIA EXPERIENCES

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

In designing and developing interactive media systems and technology, one is often faced with looking for interesting patterns and trends. This course presents theoretical concepts and practical tools for analyzing data for multimedia applications and solving machine learning problems, such as classification, in media technology. Many of these methods are used in, e.g., automatic speech recognition, face detection, web page ranking, autonomous driving, etc. The course includes the following topics: multivariate probability density functions, Bayesian classification, estimation, and detection, parametric (e.g., Gaussian density-based) and non-parametric classifiers (e.g. k-nn, parzen, convolutional neural networks), regression, data fitting, evaluation of classifiers and estimators, unsupervised and supervised learning (e.g., reinforcement learning), feature selection and reduction. The course will contextualize these techniques by how they apply as tools for addressing media creation challenges.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of multivariate statistics and how to model multivariate data, e.g., using probabilistic and parametric descriptions
- understanding of the principles of supervised (e.g., Bayesian classification, SVM, least squares regression, deep learning) and unsupervised learning methods, (e.g., k-means, hierarchical clustering, Gaussian mixture models)
- understanding of features, feature selection, feature learning, and dimensionality reduction (e.g., forward feature selection, principal component analysis, autoencoder)
- knowledge of the application of machine learning techniques and tools to address media creation problems (e.g. visual effects, games, procedural generated content, motion capture etc.)

SKILLS

Students who complete the module will be able to:

- choose, implement and apply machine learning methods to solve typical machine learning problems (e.g., classification, detection, regression)
- apply knowledge to compare machine learning methods in terms of performance and complexity
- apply the theory of multivariate statistics to analyze multimedia data (e.g., speech and music, images of faces, gestures, etc.)

COMPETENCES

Students who complete the module will be able to:

- apply multivariate statistics to analyze multimedia data, and reflect on a variety of possibilities to recommend a solution to the related machine learning problem(s)
- apply machine learning methods to such problems and evaluate, discuss and generalize the results and reflect on their implications regarding the problems and the data

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Machine Learning for Media Experiences
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Machine Learning for Media Experiences
Module code	MSNMEDM1222
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

IMMERSIVE EXPERIENCES

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

Most emerging media is inherently multisensory and offers varying degrees of technological immersion, ranging from screen-based displays (e.g., smartphones and tablets) to fully immersive displays enabling natural perception and interaction (e.g., virtual reality).

The objective of this module is to design, develop and evaluate immersive applications (AR/VR/XR), where knowledge of perceptual and cognitive affordances and limitations is explicitly utilized to optimize the efficacy of the immersive application according to a desired set of parameters or requirements.

The module requires students to draw on fields and disciplines such as cognitive psychology and cognitive ergonomics, interaction design or multimodal interaction, to design and evaluate compelling/engaging experiences explicitly founded on scientifically sound perceptual and cognitive considerations.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of types of immersive systems, interaction technologies and technological factors influencing immersiveness
- understanding of core aspects of human perception and cognition and how these might pertain to the interaction with content in multimodal systems and to aspects of immersiveness

SKILLS

Students who complete the module will be able to:

- implement immersive media systems utilizing state-of-the-art technologies and concepts
- analyze the applicability and affordance of perceptual and cognitive processes in the context of immersive media systems

With respect to Problem-Based Learning students will be able to:

- produce a project report according to norms of the area, take into consideration relevant literature, apply correct terminology and convey the research-based foundation, problem and results of the project orally and in writing in a coherent manner, including the relationship between the problem formulation, the project's realization and its conclusions
- evaluate and select relevant literature, scientific methods and models and other tools for application in the project work, and evaluate the project's problem area in a relevant scientific context

COMPETENCES

Students who complete the module will be able to:

- create and evaluate perceptually optimized immersive media systems/experiences based on utilizing affordances or limitations in perceptual and cognitive processes

With respect to Problem-Based Learning students will be able to:

- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for carrying out, potentially cross-disciplinary, collaborations
- assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Immersive Experiences
Type of exam	Oral exam based on a project Oral examination based on a written project report and a media-technological product plus an A/V production that illustrates and summarizes the project.
ECTS	15
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Immersive oplevelser
Module code	MSNMEDM2221
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	15
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MULTI-SENSORY INTERACTION AND MEDIA COGNITION

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

In interactive-immersive systems that rely on digital technology, human interactivity and responsiveness are directly linked to the processes of human perception and cognition.

This course introduces current research trends and emerging paradigms on the relation between digital technologies and multi-modal perception and cognition. Particular emphasis is put on multi-modal perception processes that are usually involved in interactive digital media (e.g., visual, auditory, haptic, proprioception) and higher cognitive processes related to interactivity (e.g. multimodal integration, enaction, intelligibility, cognitive closure, affective states and emotions, spatial cognition and navigation).

The course draws relevant knowledge from a variety of disciplines and fields such as cognitive neuroscience, ecological psychology, biology, cognitive ergonomics and cognitive technologies. Various bio-behavioral and biofeedback methods for interaction design and assessment are also introduced (e.g. EEG, EMG, ECG, galvanic skin response, ocular measures) and new trends in integration of interactive digital technologies with cognitive processes are addressed (e.g. multi-modal interfaces and set-ups, brain-computer-interfaces, enactive interfaces).

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of the main paradigms, concepts and disciplines that contribute to multimodal perception research and cognition studies and which have relevance for the interaction of human subjects with immersive-interactive systems
- knowledge about the potentialities and limits that the human “perceptual apparatus” and the cognitive system present for the technology designer
- understanding of the relations between multimodal perception, higher cognitive functions, affective states and action

SKILLS

Students who complete the module will be able to:

- apply knowledge on human multimodal perception and cognition in the design of interactive digital systems
- design perception and cognition experiments related to the cross-modal action of two or more senses
- apply biofeedback and bio-behavioral measurements in experimental designs

COMPETENCES

Students who complete the module will be able to:

- synthesize knowledge and theoretical frameworks from a variety of relevant sources and disciplines, which contribute to the study of technology-cognition interaction and apply this knowledge in the design of multimodal interactive systems
- analyze and interpret experimental work and literature in the field

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Multi-Sensory Interaction and Media Cognition
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Multi-sensorisk interaktion og mediecognition
Module code	MSNMEDM2222
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

PROJECT-ORIENTED STUDY IN AN EXTERNAL ORGANISATION

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The objective of this module is to provide students with the opportunity to mature their acquired competences by focusing on applying skills and competences to practical, real-world research and development activities. By doing so, the module will also support students in building an enhanced understanding of their technical and scientific identity and competence profile in relation to the job market. Finally, experiences from this module can ideally form the basis of topics for a Master's thesis.

In practise, the student can choose to carry out the Project-Oriented Studies in an External Organization in two ways:

1. in an actual external organization and/or company, under joint supervision from the external organization and the university
2. in a university research group, working on practical research and development activities related to media systems

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of organizational, technical, market-oriented, or research-oriented mechanisms that inform the design and development of a media technological solution

With respect to Problem-Based Learning students will be able to:

- account for the scientific foundation, and scientific problem areas
- describe the state of the art of relevant research

SKILLS

Students who complete the module will be able to:

- analyze the state-of-the-art of relevant research and/or practices in the field of the problem area
- operate effectively as a member of a multi-disciplinary research and development team in collaboration with clients and representative users

With respect to Problem-Based Learning students will be able to:

- master the scientific methods and general skills associated with the problem area
- produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- evaluate and discuss the project's potential for further development

COMPETENCES

Students who complete the module will be able to:

- create novel media technological contributions, be it tools, designs, implementations, evaluations, or research results, by taking into account the constraints and affordances of a given context (company, organization, research project, etc.)

With respect to Problem-Based Learning students will be able to:

- participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- independently assume responsibility for own scientific development

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Project-Oriented Study in an External Organisation
Type of exam	Oral exam based on a project Oral examination based on submitted project documentation
ECTS	30
Permitted aids	With certain aids: See semester description
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Projektorienteret forløb i en virksomhed
Module code	MSNMEDM3221
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

DADIU GAME PRODUCTION

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The objective of this module is to provide students with the opportunity to mature their acquired competences by focusing on applying skills and competences to practical, real-world research and development activities. By doing so, the module will also support students in building an enhanced understanding of their technical and scientific identity and competence profile in relation to the job market. Finally, experiences from this module can ideally form the basis of topics for a Master's thesis.

In practise, the module is organised as a 30 ECTS unit where the student follows a game design and development programme under DADIU, The Danish National Academy for Digital Interactive Entertainment. Under the DADIU programme the student is teamed up with students from other educations at other institutions in interdisciplinary teams, and each team has to complete two cycles of computer game design, implementation and evaluation during the semester.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of organizational, technical, market-oriented, or research-oriented mechanisms that inform the design and development of a game design

With respect to Problem-Based Learning students will be able to:

- account for the scientific foundation, and scientific problem areas
- describe the state of the art of relevant research

SKILLS

Students who complete the module will be able to:

- analyse, design, implement, and evaluate (parts of) a computer game using relevant techniques and tools
- operate effectively as a member of a multi-disciplinary research and development team

With respect to Problem-Based Learning students will be able to:

- master the scientific methods and general skills associated with the problem area
- produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- evaluate and discuss the project's potential for further development

COMPETENCES

Students who complete the module will be able to:

- create novel game technological contributions, be it tools, designs, implementations, evaluations, or research results, by taking into account the constraints and affordances of a given context (e.g. game genre and/or target audience)

With respect to Problem-Based Learning students will be able to:

- participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- independently assume responsibility for own scientific development

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	DADIU Game Production
Type of exam	Oral exam based on a project Oral examination based on submitted project documentation
ECTS	30
Permitted aids	With certain aids: See semester description
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	DADIU spilproduktion
Module code	MSNMEDM3222
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MASTER'S THESIS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The objective of the module is to document that the student, independently or in a small group, is capable of planning and completing a major research and/or development project in the area of Media Technology. The project must document the student's ability to apply scientific theories and methods, critically analyse existing work, and synthesize new knowledge and media technological solutions.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- thorough understanding of the affordances and limitations posed by the application context of the chosen media technological project, both from a user/use-case perspective and a technological perspective

With respect to Problem-Based Learning students will be able to:

- account for the scientific foundation, and scientific problem areas
- describe the state of the art of relevant research

SKILLS

Students who complete the module will be able to:

- design and carry out iterative development processes that generate knowledge of users and/or relevant media technological solutions, and feed this knowledge into optimizing the user experience or other relevant performance metrics

With respect to Problem-Based Learning students will be able to:

- master the scientific methods and general skills associated with the problem area
- produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- evaluate and discuss the project's potential for further development

COMPETENCES

Students who complete the module will be able to:

- systematically conceive, design, implement, and evaluate prototypes of digital media products targeted at specific users and/or use-cases
- design and carry out scientifically sound experiments to evaluate media products, as well as analysing and communicating the results thereof

With respect to Problem-Based Learning students will be able to:

- participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems

- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- independently assume responsibility for own scientific development

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work. The project is carried out individually or in small groups of a maximum of three students. At least one internal supervisor is assigned, who deals with the primary area of the project in his or her research.

EXAM

EXAMS

Name of exam	Master's Thesis
Type of exam	Master's thesis/final project Individual oral examination based on a written project and a media-technological product plus an A/V-production illustrating and summarizing the project.
ECTS	30
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Kandidatspeciale
Module code	MSNMEDM4221
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

REAL-TIME COMPUTER GRAPHICS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The objective of the module is to provide students with a strong foundation, and state-of-the-art competences in the area of Computer Graphics, with applications in graphics for games and interactive media. Game engines such as Unity and Unreal provide powerful real-time rendering and animation functionality, much of which standard developers might not be qualified to fully utilize. This module aims at providing students with the theoretical background and in-depth understanding of high-end rendering techniques, so as to enable them to utilize game engine rendering to its full potential, to choose the optimal approach to rendering challenges, and to design novel solutions to such challenges. The module will also introduce applications for media content creation and visual storytelling, such as real-time filmmaking, animation and virtual production techniques.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge of light-matter interaction in the form of radiometric and photometric concepts
- understanding of fundamental rendering challenges, and core aspects of the tradeoff between rendering quality and computational requirements
- understanding of state-of-the art rendering techniques that position themselves on various levels of this tradeoff

SKILLS

Students who complete the module will be able to:

- apply pre-rendered or real-time rendered advanced rendering techniques, such as baking, light probes, High Dynamic Range formats, tone mapping, raytracing, etc.
- analyze the applicability of state-of-the-art rendering techniques in relation to relevant rendering challenges and requirements
- apply rendering for media content creation, such as animation production, real-time filmmaking, virtual production, interactive experiences, games or other relevant application areas

COMPETENCES

Students who complete the module will be able to:

- evaluate affordances and limitations of advanced rendering techniques, and synthesize/create novel rendering solutions for interactive real-time Computer Graphics, e.g. for media content creation such as games, XR experiences, virtual production, animation and real-time filmmaking

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Real-Time Computer Graphics
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Realtids computergrafik
Module code	MSNMEDM1223
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MOBILE AND WEARABLE COMPUTING

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

With mobile devices being the de-facto most widespread and most personal form of computing, they enable the implementation and deployment of novel services, interactions and applications in many different areas (e.g., mobile health, smart mobility and transport, and entertainment). This course will focus on the building blocks for such services and as well as discuss how the strengths and weaknesses of (distributed) mobile and wearable systems can be navigated, both from a development as well as from a user experience perspective. Due to the personal nature of these devices and wearable technology's abilities to sense the user's activities in unprecedented manners, we will also consider privacy and ethical concerns related to the development of these platforms.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge and understanding of the current state of the art of research methods in mobile and wearable computing
- understanding of suited interaction techniques for mobile and wearable devices
- understanding of development restrictions related to mobile and distributed platforms

SKILLS

Students who complete the module will be able to:

- critically review and apply literature and case studies on mobile and wearable computing research topics
- apply established and novel methods for designing and evaluating mobile and wearable user interfaces
- identify strengths, weaknesses and opportunities of mobile and wearable technologies and be able to apply these insights to solve novel problems
- analyze the impact of mobile and wearable technologies on society

COMPETENCES

Students who complete the module will be able to:

- analyze and develop new user interfaces, algorithms and services for mobile and wearable devices
- analyze existing and novel mobile and wearable platforms from usability, user experience and ethical perspectives

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Mobile and Wearable Computing

Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Mobile and Wearable Computing
Module code	MSNMEDM1224
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

NARRATIVES IN INTERACTIVE SYSTEMS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The course introduces state of the art frameworks, concepts and techniques in order to enable students to design, implement and evaluate Interactive Digital Narrative products that involve the use of storytelling in the latest emerging technological platforms. It presents key concepts and issues from the Interactive Digital Narrative and Storytelling fields, such as:

- Design trade-offs between different forms of narrative immersion (spatial, temporal, emotional, epistemic) and the different forms of interactivity (both, from the technological and from the narrative points of view).
- Trades-off between user agency and authorial control over the narrative's coherence.
- How to include the user in the narration process (i.e.: perspective taking, and points of view technologies)
- How to harmonize the interactivity of the narrative with different technological affordances (e.g. haptic devices, tracking technologies, avatars and artificial agents, embodied interaction, etc.).
- Interactive narratives as rhetorical devices (for persuasive communication).
- How to investigate user experience in narrative-based immersive and interactive applications (exploring topics such as immersion, engagement, narrative cognition, suspensión of disbelief, believability, and dramatic engagement, for instance).
- Evolving and emerging paradigms in Digital Interactive Narratives such as Transmedia Storytelling, Environmental Storytelling, IDNs for representing complexity and big data, Extended Realities for IDNs, Adaptive Narratives, Storyworld construction, and Location-based technology for IDNs.
- The dimensions of ethics and social responsibility in interactive and immersive narrative technology.

Students get the chance to work with projects and cases from different domains of applications: games and serious games, edutainment, interactive storytelling, virtual and augmented reality, interactive documentaries, museum science, cultural experiences, performing arts, social media, healthcare apps, immersive journalism, and art installations.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge about state of the art frameworks and methodologies for Interactive Digital Narratives (IDN) and immersive storytelling
- understanding of the design implications of narrative structures in different applications of immersive and interactive media
- knowledge about new emerging and innovative technological platforms and paradigms for Interactive Digital Narratives
- understanding about the socio-cultural context and the ethical implications of interactive and immersive narratives in digital culture

SKILLS

Students who complete the module will be able to:

- apply established and novel concepts and methods for designing interactive narratives in interactive and immersive media
- synthesize rhetorical strategies with aesthetic and design choices for IDNs in specific domains of application
- choose and implement appropriate concepts and frameworks for evaluating user-experience in interactive digital narratives

COMPETENCES

Students who complete the module will be able to:

- effectively monitor and interpret current and future trends in technological convergence in order to engage in innovative interactive narrative design
- develop novel concepts and frameworks for applying interactive digital narratives in different cultural and commercial domains
- reflect on, and consider the ethical implications and the social responsibility aspects of using narratives and rhetorical devices in interactive and immersive systems

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Narratives in Interactive Systems
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Narrativer i interaktive systemer
Module code	MSNMEDM1225
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

SIGNAL PROCESSING FOR INTERACTIVE SYSTEMS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

Modern multimedia systems most often make use of numerous sensors to capture inputs from the user(s) for interaction with the system. However, the real-life environment around such systems is typically dynamic, noisy, and unpredictable, which hinders direct application of data-driven methods to infer the desired user interaction. This course therefore introduces signal processing theory and methods for analyzing and processing sensor data, e.g., to facilitate robust feature extraction and data clean-up for subsequent machine learning. More specifically, the course will go over the following topics: spectral analysis, signal modelling, parameter estimation, noise estimation, signal enhancement, and multichannel filtering.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- understanding of basic spectral analysis methods, including both non-parametric and parametric methods
- understanding of basic signal models for describing sensor data and how to extract their parameters from sensor data
- understanding of the fundamentals of signal enhancement, e.g., noise estimation, optimal filtering, and multi-sensor filtering

SKILLS

Students who complete the module will be able to:

- choose and implement appropriate methods for robust extraction of features from sensor data (e.g., IMU samples, audio recordings, images)
- choose and implement methods for reducing noise components in sensor data
- apply knowledge to compare different signal processing methods for interactive systems in terms of computational efficiency and accuracy

COMPETENCES

Students who complete the module will be able to:

- analyze a data set related to interactive systems and identify appropriate methods for processing the data, e.g., to enable machine learning for interaction
- apply the relevant signal processing methods to an interactive systems data set and evaluate and discuss the results and their implications on the system

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Signal Processing for Interactive Systems
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Signalbehandling til interaktive systemer
Module code	MSNMEDM2223
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

EMBODIED INTERACTION

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The course presents the emerging theory of embodied interaction interleaved with practical implementations of intelligent systems. The concept of embodiment includes both the physical presence of system and user as well as the social embedding in a network of interaction practices that are largely based on the information provided by the human (or artificial) body. Examples include but are not limited to movement, haptics, or tangible interactions.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge of standard methods and techniques in embodied interaction
- understanding of multimodal interpretation of bodily forms of expression both as input and output channel for intelligent systems

SKILLS

Students who complete the module will be able to:

- apply methods and techniques to real world scenarios (e.g., games, robots, public installations, etc.).
- apply established and novel methods for evaluating embodied interaction in real world scenarios

COMPETENCES

Students who complete the module will be able to:

- evaluate the potential of different methods and techniques in order to make the proper design choices for embodied interaction
- synthesize and develop intelligent systems allowing for embodied interaction

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Embodied Interaction
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description

Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Embodied Interaction
Module code	MSNMEDM2224
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

SPATIAL USER INTERFACES

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

Spatial user interfaces (SUIs) are becoming increasingly ubiquitous, and are central to the development of applications deployed on a variety of systems. The objective of the module is to provide students with updated knowledge, skills, and competencies with respect to human-computer interaction. The module can conceptually be seen as instructing established theory and using the latest research to enable students to replicate existing spatial interaction techniques and innovate novel ones. Particularly, the module will allow the students to understand, analyze, develop, and evaluate established and novel SUIs. It will introduce established theories and methods as well as the latest research on SUIs. The knowledge, skills, and competencies will be highly relevant to future project work and positions in the industry.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge of system architectures, forming the basis for state-of-the-art spatial user interfaces, including input/output devices, software, and systems
- understanding of traditional and state-of-the-art spatial interaction techniques, including selection, manipulation, navigation, and system control
- understanding of how spatial user interfaces can be applied in research-, or industry- contexts (e.g., in relation to entertainment, educational, and industrial applications)

SKILLS

Students who complete the module will be able to:

- create established and novel spatial interaction techniques (e.g., implement an existing approach (e.g., navigation), and one which is novel)
- apply established and novel methods for evaluating spatial user interfaces

COMPETENCES

Students who complete the module will be able to:

- analyze and evaluate traditional and state-of-the-art spatial user interfaces
- synthesize and develop spatial user interfaces

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Spatial User Interfaces

Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Spatial brugerinterfaces
Module code	MSNMEDM2225
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

GAME RESEARCH AND DEVELOPMENT

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objectives

The objective of the module is to let students use game research to design, develop, and evaluate an e.g. transformational, purposeful, serious game, or other notable genres. This module teaches both the conceptual and theoretical foundation, practical implementation, and methodological approaches for user evaluation of game design. Students must conduct in-depth research of a topic to be used in the game development process, and write a paper documenting the relevant research, methods, and findings. An essential focus of the course is not only to design the game, but also how to perform and document solid and advanced user evaluations. The course will also provide a theoretical foundation (definitions) and applied (how to measure) overview of concepts of e.g. motivation, flow, engagement, immersion, and gamification within a context of game research and development.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain:

- knowledge of serious/transformational games with a purpose
- understanding of motivational aspects of games, such as player motivation, flow, engagement, immersion, gamification and other related concepts
- knowledge on new advanced platforms and game-technologies in which these elements are embedded

SKILLS

Students who complete the module will be able to:

- apply data driven design to implement and evaluate a transformational/serious game with a purpose
- apply in-depth research to develop a simple game, part of a game (e.g. an interaction, a mechanic), or a game-like, playful interaction, or a gamified experience
- discuss the relevant research and methods, and synthesize findings in a written report

COMPETENCES

Students who complete the module will be able to:

- evaluate player experiences, games and gamified elements
- synthesize research based knowledge to create games with a purpose and document the process and findings

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

PREREQUISITE FOR ENROLLMENT FOR THE EXAM

- To be eligible to take the exam, the student must timely have handed in any mandatory assignments

EXAMS

Name of exam	Game Research and Development

Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Spil-forskning og -udvikling
Module code	MSNMEDM2226
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Medialogy
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design