AALBORG UNIVERSITET

Art and Technology, AAU, 5th semester 2018
Narratives and Interaction / Narration og interaktion

Altxerri Cave Fox Inside Reindeer (2018) Digital oil painting. Weston Westmoreland

Semester details

School: MPACT

Study board: ArT & Technology

Study regulations: BA Study Program in Art & Technology, The Faculty of Humanities, AAU, September 2015:
http://www.fak.hum.aau.dk/digitalAssets/109/109056_ba_art_2015_hum_aau.dk.pdf

Semester framework theme

The semester introduces the production and creation of narrative artefacts and universes with special emphasis on the integration of interactive narratives and physical stages. Understanding the logic that shapes the narrative aspects of culture production and artefacts is essential for designing compelling and interactive aesthetic experiences. The modules are informed by

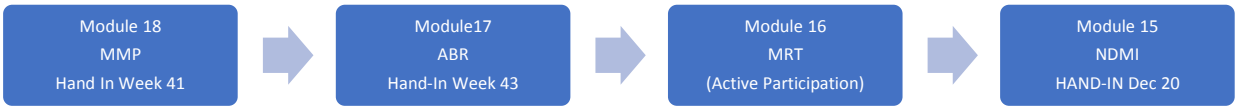
theoretical and practical courses and seminars concerning concept development with new media including interactive cinema, video editing, scripting, screenings, workshops and discussion. The semester projects provide opportunities to establish collaborative processes and projects with external partners and the city of Aalborg.

Semester organisation and time schedule

The semester is organized around a central collaborative project: the development of an experimental, participatory performance project in collaboration with Aalborg Theatre and two resident artists. Students will work in small groups on the development of a cohesive, unified performance project titled *The Foxcave*.

The semester consists of 4 modules: **Module 15**: *Narratives and Interaction*, (15 ECTS); **Module 16**: *Mixed Reality Technologies* (5 ECTS); **Module 17**: *Art-Based Research* (5 ECTS); and **Module 18** (Elective): *Multimedia Programming* (5 ECTS).

Important Dates



Week 36 Semester Start/Shusterman Performance Workshop

Week 37 FOXCAVE Workshop #1 – Sep 12-13th; Video Editing

Week 38 MMP – Soft Robotics Workshop with Jonas Jørgensen

Week 39 Video Editing/ Editing Suites Reserved

Week 40 ABR Workshop #1: October 2nd 5pm-8pm (Kul)

Week 41 MMP Hand-In

ABR Workshop #2 October 9th 5-8pm (Kul)

Week 42 ABR – Workshop #3 & 4 Prøve 16 October (Nordkraft)

Week 43 Hand-In (ABR)

Utopia (Youth Performance Training Program) – ABR – Oct 26/27 in Hjorring

Week 44 ABR Examination (29th, 30th)

Week 45 FOXCAVE Workshop #2 – Nov 7-8, 10h-15h; PROJECT WORK

Week 46 PROJECT WORK

Week 47 PROJECT WORK

Week 48 Technical Rehearsals (AAL Theatre)

ArT Exhibition (ArT1 & ArT3)

Week 49 Performances (AAL Theatre) (Artists present Dec 4-5)

Week 50 Writing Week

Week 51 Module 15: Hand-In Dec 17

Week 2 January 7-8 ArT 5 Module 15: Oral Exams

Production Week Schedule Week 48/49 (Nov 26- Dec 10) **Aalborg Theatre**

Nov 26 – Load-in

Nov 27-Dec 1 Technical rehearsals

Dec 5 – Invited Dress Rehearsal (ArT)

Dec 6-8 Public Performances

Dec 9 – OFF (theatre is closed)

Dec 10 – Strike/Load-Out

Module 15: *Narratives and Interaction*, (15 ECTS). The module comprises the semester-project and the following courses supporting the semester-project (10 ECTS):

1. *Artistic and Academic Methodology V* (Participatory Methods). Course Coordinator: Elizabeth Jochum. Lecturer: Sandro Masai (1 ECTS). Lectures and workshops. (Integration of the courses on Artistic and Academic Methodology and Manuscript).
2. *Dramaturgy and Media*: Narrative theories from literature, film, performance and new media. Course coordinator: Elizabeth Jochum. Lecturers: Elizabeth Jochum and Falk Heinrich (2 ECTS). Lectures, workshops and in-course assignments.
3. *Manuscript I*: Storyboards, playwrighting and authoring performance scores. Course Coordinator: Elizabeth Jochum (1 ECTS).
4. *Video Editing*: Video Camera, Projection and Live Performance. Course coordinator: Elizabeth Jochum. Lecturer: Thomas Busk. (1 ECTS)

Module 16: *Mixed Reality Technologies* (5 ECTS). Focuses on the technology needed to do your semester-projects. The module comprises the following courses:

1. Programming Multimedia Systems. Course coordinator: Cumhur Erkut. Lecturers: Cumhur Erkut, Sune Petersen, TBA (2 ECTS).

Module 17: *Art-Based Research* (5 ECTS) is about concept development strategies and practice-based research. The module comprises the following courses:

1. Art-Based Research: Theory and Practice. Course coordinator: Falk Heinrich. Lecturers: Falk Heinrich. (2 ECTS).

Module 18 (Elective): *Multimedia Programming* (5 ECTS). The module comprises the following courses:

1. Multimedia Programming. Course coordinator: Markus Löchtefeld.
   Lecturers: Markus Löchtefeld, Elizabeth Jochum, Jonas Jørgensen. (2 ECTS).

Or You can attend course(s) offered by other study programs. Contact the study counselors or Anne Nielsen for further information.

REPORT FORMAT

Please use the following template for your Semester Report (Hand-In).

ABSTRACT

A short paragraph summarizing the main aspects of the investigation---context, problem, results, and insights.

INTRODUCTION

This is where you set the context for your work. What is the big picture? What is the motivation for investigating this area?

PROBLEM STATEMENT

Here you concisely state what the problem is you are investigating. You may also present a hypothesis to be supported or rejected through your own experiments.

BACKGROUND

This should contain previous work in the area you are investigating. This is of major importance in conducting any type of research, academic or otherwise. You should clearly identify antecedents and point out both the importance and shortcomings of each in relation to your own work. Always reference refutable sources (i.e., peer-reviewed journals, books, etc.) and, when possible, primary sources (i.e., the original author of the work) to avoid misinformation. Google and Wikipedia are okay only as starting points.

DESIGN

Here is where you outline your process of creation and the decisions you made along the way. Elaborate on and justify your artistic, aesthetic, and technical choices. Describe your experiment design and any methods you may have used.

IMPLEMENTATION

How was the final work constructed? Include overall system diagrams and exhibition arrangement. Detail the most important aspects of the implementation and place the rest in the appendix. One should be able to fully and unambiguously re-create your artwork based on the information in this section.

ANALYSIS

Was your work successful? Support this with experimental data. If you made an initial hypothesis, do your observations support or reject it?

COLLABORATION

Please provide individual descriptions and self-evaluations of your individual contribution to the production team, and reflect on the collaboration with the external partners. One or two paragraphs per student (should be written in the first person).

FUTURE WORK

Is there anything you could have done better? How? If you were to develop this project more, what would you work on next?

CONCLUSION

This is where you bring it all together. It is NOT simply a summary of what you have done---that is supplied by the abstract. You should connect all the dots and synthesize new insights here. What can others learn from this?

REFERENCES

List of references following the **APA referencing style**.

APPENDIX

Include all data produced during your investigation. This can include experimentation/observation logs, transcriptions of interviews, survey data, source code, etc. Note that the main text can reference the information in this section.

All figures, tables, and images in the report must be labeled with a brief description and cited in the main text. You are also required to make a video documentation of the final artefact and hand it in with the report.

All material in the report that is not the original creation of the students in the group must be properly acknowledged by using the Harvard referencing style. Failure to do this will be considered plagiarism and will lead to immediate failure and possibly also to expulsion from the program.

Semester coordinator and secretary assistance

Semester coordinator: Elizabeth Ann Jochum

Secretariat assistance: Anne Nielsen

Module title, ECTS credits

Narratives and Interaction

15 ECTS

Location

5. Semester

Module coordinator

Elizabeth Jochum

Type/Method and language

Project work in groups

English

Learning objectives:

The objective of Module 15: "Narratives and Interaction" is to introduce the students to problem areas and solutions in relation to the creation of artefacts and projects, in which different forms of structuring of narrative information plays a major role, i.e. interactive storytelling, collaborative narrative projects, hypertexts etc. The module comprises of theoretical and practical courses and seminars within narratology, (interactive) dramaturgy, understanding and creation of fictional universes, writing of manuscripts and storyboards.

During this module, students should acquire:

Basic **knowledge** about

- central theories within narratology with special focus on narratives in interactive settings
- methods for the creation of narrative installations
- central theories within (inter/re-active) dramaturgy and performance design
- theories and methods of combining physical and digitally enhanced spaces
- artistic and technological strategies within performance design and performative events
- manuscripts and storyboards as central creation methods of narrative media installations
- artistic and academic methods of collaborations with external partners

Skills in

- identifying and formulating an artistic problem and/or theme within the field “Narratives and Interaction” and developing different artistic solutions (concepts) for a chosen problem/theme
- transforming basic knowledge and theories of narrativity and media technology into valid artistic concepts
- identifying dramaturgical challenges within interactive fiction and performance
- applying and implementing (interactive) dramaturgical models that combine physical and digitally enhanced spaces
- applying technological solutions in regard to interactive narratives and performance design

Competencies in

- conceiving ideas and developing concepts of (interactive) narrative artefacts that combines physical and digital means of expression
- analyzing and constructing narrative artefacts and events that merge virtual and material spaces
- employing a number of digital performance technologies
- analyzing and creating manuscripts and storyboards in regard to re-/interactive story telling
- contextualizing own artistic solutions (to state-of-art, socio-cultural requisites and consequences, art theoretical and aesthetic dimensions, etc.)
- describing, analyzing, and documenting artistic design solutions on a professional level, and communicating this to external collaborative partners.

Academic content

The module introduces the production and creation of narrative artefacts and narrative universes with special emphasis on the integration of interactive narratives and physical stages. The module is supported by theoretical and practical courses and seminars within concept development of narratives installations of various kinds, video editing, scripting, and possibly special ad hoc activities evolving from the production processes of the students. Furthermore, the module seeks to establish collaborative processes and projects with external partners.

Scope and expected performance

15 ECTS credits. 1 ECTS credit = 27,5 hours of work. 20 ECTS = 412,5 hours of work consisting of preparation for course sessions, course participation, group work, exercises, counselling and exams.

Module activities (course sessions etc.)

The semester theme is on immersive performance. Students will collaborate with theatre and performance artists to develop an original, immersive, and participatory live performance which be performed at Aalborg theatre Mindste Scene in December. Students will work in groups on individual creative contributions and are also responsible for working together as a semester to produce a unified performance. Active participation in the development, production team, group work, and performances is required for successful completion of the semester.

Performance Theme

THE FOXCAVE.

Performance Theme

The Foxcave *is an immersive music dramatic experience, based on the mythology of the fox as trickster and seducer. The Fox steals people minds, heart, eyes and ears. The performance deals with themes of truth, lies, seduction, myth and society.*

The audience is invited into "a cave" – a black box filled with smoke and/or dimmed lights - where during the course of 30 minutes and a series of songs/dance/vignettes, they meet the victims of the Fox.

The ambition for The Foxcave *is to create an environment where the audience can move around, playfully lost, and every scene appears out of the fog in front - or back or around - of them.*

The immersive experience requires us to think of the audience as the main character. The performance is aimed at their senses. The immersive experience must be first and foremost and sensual one, creating presence though immediacy of the senses, rather than a narrative causality.

The Creative Problem at the heart of the course has 3 dimensions, which all needs to work together, for the immersion and the infrastructure of The Foxcave *to work:*

1. *How do we track the audience´s movement in almost zero visibility*
2. *How can we move/guide the audience in a specific direction in an environment where there´s very limited visibility from smoke and/or darkness? Sound, proximity sensors?*
3. *How can we move props (objects, lights, speakers) and performers in the dark so that they can appear in front of an audience that also moves when needed?*

Furthermore: The final Foxcave must be as scalable, flexible and mobile as possible. As a touring performance, the Foxcave should be easy to set up, be it in a theatre, factory, concert hall, sport arena or abandoned warehouse.

Students will work in groups (2-5 persons) to develop the individual scenes, dramatic content, and interaction technologies. In addition to group work, each student will be assigned a production role, and attendance at weekly production meetings is required.

Examination

An internal combined written and oral examination in **Module 15 "Narratives and Interaction**" (Narration og interaktion).

The examination will take the form of a conversation between the student, the examiner and another internal examiner on the basis of the project report prepared by the student(s), which may be in the form of a report or portfolio as well as the product created by the student. The project exam will also address other content from the module courses.

Form of examination: b)

Number of pages: the written work must not exceed 10 pages per student (15 pages in the case of individual reports).

Duration of examination: 20 minutes per student and 10 minutes for assessment and communication of grades per group, however, the duration of the examination is maximum 2 hours.

Evaluation: Grading according to the 7-point scale.

Proportional weighting: An aggregate grade is awarded for the artefact, the written and oral performances.

The assessment results in an individual grade.

Credits: 15 ECTS

The written report, the product and the oral examination should demonstrate that the student has fulfilled the objectives outlined above.

NDMI (M15)

Dramaturgy and Media

Location

5. Semester

Module coordinator

Elizabeth Jochum

Type/Method and language

Individual or small groups

English

Course sessions

Lesson 1: Somaesthetics Workshop + Lecture

Workshop + Lecture (Falk Heinrich)

Workshop led by Richard Shusterman

Preparations:

The workshop participants have to bring:

1. Comfortable clothing (no jeans, dresses, skirts), bring/wear socks
2. A thick blanket (width: min 100 cm) and a pillow or soft towel.
3. Water bottle.

Content:

1. Training consists of an introduction to somaesthetic, body-awareness exercises, the exercises proper and experience exchange/feedback.

2. The design part consists of creative work (movements, postures, moods, recollections etc.) on the basis of the body-awareness training and in relation to the semester project.

3. We will be working towards the semester theme of Narratives and Interaction (Foxcave) please bring any material or inspiration you have gathered over the summer.

The workshop will be video-recorded.

Lesson 2: Postdramatic Theatre: Poetics of Performance

Workshop + Lecture (Elizabeth Jochum)

Workshop led by Richard Shusterman

Students will learn methods in creative techniques for conceptualizing and staging devised work for the stage and intermedia performance. Special focus will be given to understanding how directors work with playwrights, designers, and actors to adapt literary works for the stage.

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Lehmann, H-T.(2006) Postdramatic Theatre (pp.1-45)	45		Yes
Nussbaum, M. The Narrative Imagination.	20		Yes
On the Refrain (Deleuze & Guattari)	40		Yes

Lesson 3: Interactivity and Dramaturgy

Lecture

Lecturer: Falk Heinrich

The lecture introduces, firstly, relevant notions of interactionand interactivity, secondly, various dr amaturgical models ofinteractive narratives and, thirdly, work methods such aspitch, manuscript a nd storyboarding relevant for interactive narratives.

Each group has to prepare and present at the following lecture (no 6) apitch document that conveys th e group's idea of an interactive narrative of your choosing.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Ryan, Marie-Laure, 2001. *Narrative as Virtual Reality.* Baltimore: John Hopkins University Press (chapter 3, 7, 8)			via library
Manovich, Lev, 2001. *Language of New Media.* Cambridge MA: MIT			
Ryan, Marie-Laure, 2008. "Interactive Narratives, Plot Types and Interpersonal Relations", ICIDS '08 Proceedings of the 1st Joint International Conference on			

Lesson 4: Interactivity and Dramaturgy

Lecture

Lecturer: Falk Heinrich

The lecture introduces the concept of productive interactivity as asecond artistic and academic pe rspective on interactive narratives.It discusses the theoretical assumptions and practical challenge s.The second half is a student presentation of their pitch document.On the basis of the specific sto

ry world ideas, the groups willproduce, present and discuss pitch documents, manuscripts and storyboards.

Exercise: The student groups have to prepare a pitch documentsprior to the workshop and present it at the workshop. During theworkshop, the students will work with manuscript and storyboarding relevant for their project.

Lecturer(s): Falk Heinrich

Literature

	Pri. lit. no ofp.	Sec. lit. no of p.	Dig. upload
Crawford, Chris, 2005 *On interactive storytelling.* Berkeley: New Reader Games (chapter 3)			e-book via library
Katz, S. 1991. *Shot by Shot.* Studio City, CA: Michael Wiese		whole book	
Begleiter, Marcie. 2001. From word to image. Studio City, CA: Michael Wiese Productions		whole book	
Bruce Block, 2001. *The visual story.* Focal Press		whole book	

Lesson 5: Dramaturgy and Stagecraft - part 1

Lecture

Lecturer: Elizabeth Jochum with guest lecturer

This course introduces important concepts in scenography with a special emphasis on the history of performance technology, theoretical and practical conceptions of the machinic stage.

	Pri. lit. no ofp.	Sec. lit. no ofp.	Dig. upload
Theatre, Performance & Technology (CH 3, 5, 7) (Christopher		60	yes
Cambridge Introduction to Theatre Studies (Ch 3: Spaces and		20	yes
The Essential Theatre. Ch 15: Scene Design p. 361-381	20		yes
The Good Doctor (A. Chekhov) (pdf)	10		yes

Lesson 6: Dramaturgy and Stagecraft - part 2

Workshop

Lecturer: Elizabeth Jochum with guest lecturer

Hand-on activities with scenography, dramaturgy, with emphasis on stage design and narratives.

Lesson 7: Devised Theatre - part 1

Lecture + Exercise

Lecturer:

Introduction to the concepts of strategies for devised theatre and immersive performance.

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Lehmann, H-T.(2006) Postdramatic Theatre (pp.46-132)	86		Yes
Fischer-Lichte, E. (2008) Transformative Power of Performance (Ch 3)	37		Yes

Lesson 8: Devised Theatre – part 2

Lecture + Exercise

Lecturer: Elizabeth Jochum with guest resident artists

Continuation of concepts of strategies for devised theatre and immersive performance.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Lehmann, H-T.(2006) Postdramatic Theatre (pp.134-187)	53		Yes
Fischer-Lichte, E. (2008) Transformative Power of Performance (Ch 6)	20		Yes

AAM (M15)

Artistic & Academic Methodologies (Participatory Methods)

Location

5. Semester

Module coordinator

Elizabeth Jochum

Type/Method and language

Individual or small groups

English

Course sessions

Lesson 1: Performing Perception Practice – Part 1

Lecture + Workshop

Lecturer: Sandro Masai

This lecture introduces techniques for improvisation and choreography in modern dance and physical theatre. The students will practice the concept of 'thinking through the body', physically working with the dynamics of presence and movement, while reflecting upon the performer-audience interaction.

Practical exercises, group discussions and the use of video in qualitative research.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Dalsgaard, P. and Hansen, L. K. (2008). Performing Perception	33		pdf
Heath, C., Hindmarsh, J. and Luff, P. *Video In Qualitative Research – Analysing Social Interaction in Everyday Life (2010). Sage Publications Ltd.*			pdf

Lesson 2: Performing Perception Practice – Part 2

Lecture + Workshop

Lecturer: Sandro Masai

This lecture introduces techniques for improvisation and choreography in modern dance and physical theatre. The students will practice the concept of 'thinking through the body', physically working with the dynamics of presence and movement, while reflecting upon the performer-audience interaction.

Practical exercises, group discussions and the use of video in qualitative research.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Dalsgaard, P. and Hansen, L. K. (2008). Performing Perception	33		pdf
Heath, C., Hindmarsh, J. and Luff, P. *Video In Qualitative Research (2010). Sage Publications Ltd.*			pdf

Lesson 3: Performance Design planning and performing – Part 1

Lecture + Workshop

Lecturer: Sandro Masai

Design Methods applied to Performance Art.

What? (strategy) Why? (vision) How? (tactics)"

Practical exercises (project communication within the groups and external partners – moodboards, sketches and graphics) and group discussions

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
David Benyon - *Designing Interactive Systems*			Yes
Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., Wensveen, S., (2011). *Design Research Through Practice: From the Lab, Field and Showroom.* Waltham, MA, USA: Morgan Kaufmann.			Yes

Lesson 4: Performance Design planning and performing – Part 2

Lecture + Workshop

Lecturer: Sandro Masai

Design Methods applied to Performance Art.

"What? (strategy) Why? (vision) How? (tactics)"

Practical exercises (project communication within the groups and external partners – moodboards, sketches and graphics) and group discussions

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
David Benyon - *Designing Interactive Systems*			Yes
Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., Wensveen, S., (2011). *Design Research Through Practice: From the Lab, Field and Showroom.* Waltham, MA, USA: Morgan Kaufmann.			Yes
Performance, Technology and Science – Johannes Birringer			Yes

MAN (M15)

Manuscript
Location 5. Semester
Module coordinator

Elizabeth Jochum

Type/Method and language

Individual or small groups

English

Course sessions

Lesson 1: Basics of Dramatic Writing

Workshop

Lecturer: Elizabeth Jochum with Jesper Pedersen & Svend Kristensen

This lecture and workshop provides and in-depth discussion the tenets of dramatic writing and epic poetry. We begin by exploring how the core of narrative theory is applied in classical playwrighting. Exercise will include dialogue, short plays, and performance sketches.

We will also discuss thedifferent approaches to manuscript, performance score, and playwriting in different traditions where there is no traditional of literary analysis for texts. How do artists record and devise works in the absence of a literary text? What does a manuscript for a performance look like?

Literature

	Pri. lit. no ofp.	Sec. lit. no ofp.	Dig. upload
Playwriting (Smiley, S and Bent, N) (pdf)	25		yes
Poetics (Aristotle) (pdf)	40		yes
Delueze & Guattari (1988) A Thousand Plateaus. (Ch	40		yes

Lesson 2: Experiments in Dialogue and Structure

Workshop

Lecturer: Elizabeth Jochum with Jesper Pedersen & Svend Kristensen

This lesson builds on the first lesson and introduces more abstract and complex approaches to dramatic writing. Emphasis will be placed on experimental approaches to playwriting and manuscript development and devised theatre.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
The Art of Dramatic Writing (Egri, Lgos) (pdf)	30		Yes
Introduction to Dramaturgy (Romanska, M.) (pdf)	15		

Lesson 3+ 4: Manuscript and Scoring for Devised Theatre

Workshop

Lecturer: Elizabeth Jochum with Jesper Pedersen & Svend Kristensen

This workshop focuses on developing and devising through improvisation and performance practice. Students will devise methods for visualizing and scoring performance narratives and devising intermedia performance.

Presentations and discussions.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Devised Theatre (pdf)	3		Yes

VE (M15)

Video Editing

Location
5. Semester

Module coordinator

Elizabeth Jochum

Type/Method and language
Individual or small groups
English

Course sessions
Lesson 1: Introduction to the Camera
Lecture
Lecturer: Thomas Busk

This course introduces students to the basic of the digital camera, and covers topics such as settings, cameraset-up,exposure,etc.

Students will work in groups to document their art projects, from design to completion, and produce a 3 minute video. It is strongly recommended that students use the projects in the Multimedia Programming Elective: Robotic Art for their Video Editing project

Literature

	Pri. lit. no ofp.	Sec. lit. no ofp.	Dig. upload
Adobe handout – course pack	25		yes

Lesson 2: Film Lighting
Workshop
Lecturer: Thomas Busk
This hands-on workshop teaches the fundamentals of film lighting. Students will apply these principles in work on their video documentation projects.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
			Yes

Lesson 3+ 4: Fundamentals of Editing: part 1 and 2
Workshop
Lecturer: Thomas Busk
This hands-on workshop provides students with an overview of editing principles and features of Adobe Premiere, the timeline-based video editing application. The course also introduces important concepts in film editing, such as editing patterns, coherence, continuity, transitions, montage, and music.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
			Yes
			Yes

Module 16: Mixed Reality Technologies

Mixed Reality Technologies

5 ECTS

Location

5. Semester

Module coordinator

Cumhur Erkut

Type/Method and language

Individual or small groups

English

Learning objectives:

During this module, students should acquire:

Basic **knowledge** about

- theories and methods used towards the creation of mixed reality systems, e.g., motion capture and object tracking
- mapping between real- and virtual-world environments
- methods for evaluating experiences and presence in different environments

Skills in

- applying methods for development of augmented, mixed and virtual environment
- applying methods for tracking of fiducial and natural objects

- applying methods for automated analysis and recognition of human motion
- analyzing mappings between real, augmented, mixed or virtual reality environments
- analyzing user experiences and presence in augmented, mixed or virtual reality environments

Competencies in

- analyzing and constructing augmented, mixed and virtual environments
- analyzing and constructing motion capture systems
- analyzing and constructing systems that map information between real, augmented, mixed or virtual reality environments.

Academic content

The goal of this module is to introduce the students to theories and methods of mixed reality technologies in relation to the creation of interactive or re-active narratives and performances that merge virtual and material spaces. The module is comprised of theoretical and practical courses and seminars that concern use of technologies for construction of performative environments and/or installations.

Scope and expected performance

5 ECTS credits. 1 ECTS credit = 27,5 hours of work. 5 ECTS = 137,5 hours of work consisting of preparation for course sessions, course participation, group work, exercises, counselling and exams.

Examination

An internal written examination in **Module 16: "Mixed Reality Technologies"** (Mixed reality teknologi).

Form of examination: c)

The assignment is evaluated by one examiner and awarded a pass/fail grade.

Number of pages: the written work must not exceed 10 pages.

Evaluation: pass/fail. In case of a Fail grade, also a second examiner will evaluate the assignment.

Substitution: the examination may be substituted by satisfactory and active participation in courses, i.e. 80% presence and submission of all assignments set during the course.

Credits: 5 ECTS

The examination should demonstrate that the student has fulfilled the objectives outlined above.

PT-I (M16)

Performance Technology I

Location

5. Semester

Module coordinator

Cumhur Erkut

Type/Method and language

Individual or small groups

English

Course sessions

Lesson 1: Introduction to Performance Technology and Dataflow Programming

Lecture

Lecturer: Cumhur Erkut

Thursday November 1st, 8:15-10:00

This series of lectures and workshops will teach how to use mixed media technologies in an interactive performance situation, tightly integrated with the semester project. The course is based around a free graphical programming environment, Pure Data (often called PD, https://puredata.info/), which is commonly used in interactive art, music and performance applications.

In the introduction lecture, the following topics will be covered: Models of interaction in performance and Introduction to tools and techniques. Examples will be discussed.

Literature

	Pri. lit. no ofp.	Sec. lit. no ofp.	Dig. upload
Scott deLahunta: Virtual Reality and Performance	10		yes
Andrew Farnell: Designing Sound (Pure Data intro)		99	yes
Sha Xin Wei: Chapter 2	44		yes

Lesson 3: Mixed Reality, Tracking techniques and Movement Qualities

Workshop

Lecturer: Cumhur Erkut

Thursday November 1st 12:30-13:15

Virtual Reality, Augmented Reality and Mixed Reality: Tracking technologies, sensors, motion detection, blob detection, skeleton detection. Movement Descriptors and Qualities.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Krevelen & Poelman (2010) A Survey of Augmented Reality Technologies, Applications and Limitations	10		Yes
Larboulette, Caroline, and Sylvie Gibet. (2015)“ A Review of Computable Expressive Descriptors of Human Motion,” 21–28, Proc. MOCO: ACM, 2015	8		Yes

Lesson 4: Discussion of project ideas and prototypes

Workshop

Lecturer: Cumhur Erkut

Thursday November 1st 13:30-15:00

Discussion of semester project ideas and prototypes from a performance technology perspective.

Evaluation methods for Mixed Realities.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Grasset: Survey of Evaluation Techniques of Augmented Reality File	27		Yes
			Yes

PMS (M16)

Programming Multimedia Systems

Location

5. Semester

Module coordinator

Cumhur Erkut

Type/Method and language

Individual or small groups

English

Course sessions

Lesson 1+2: Introduction to vvvv

Lecture

Lecturer: Sune Petersen

Tuesday oct. 23rd 10:15-12 lesson 1, 13:15-15h (lesson 2)

This series of lectures will teach how to use mixed media technologies in an interactive performance situation, tightly integrated with the semester project. The course is based around vvvv (https://vvvv.org/). VVVV is a multimedia programming environment, originally developed for large media installations for trade fairs etc. and can as such control most standard and many non-standard AV and IT Devices.

Topics: Interface, Basic 2D and 3D graphics and playback of media files, playing back audio. Simple interfacing to cameras and sensors.

An exercise using the acquired skills will be given, to be carried out in the semester project groups. It should be presented in a five-minute presentation at lecture 4.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
vvvvv documentation	25		yes

Lesson 3: Control Protocols

Lecture

Lecturer: Sune Petersen

Wednesday oct. 31st 10:15-12

This hands-on workshop teaches the fundamentals of film lighting. Students will apply these principles in work on their video documentation projects.

Protocols for communicating between vvvv and Vvvv on another computer or Vvvv in another instance on the same computer. Lighting fixtures

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Vvvv, OSC, DMX, and Arduino documentation	50		Yes

Lesson 4: Hardware, projectors, and lamps

Lecture, Seminar

Lecturer: Sune Petersen

Anatomy of projectors and lamps. 5 min student presentations.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
			Yes
			Yes

Module description

Module title, ECTS credits (and possibly STADS code)

Art-Based Research

5 ECTS

Link to Study Regulation (Program)

Location

5. semester, Art and Technology, MPACT

Module coordinator

Falk Heinrich

Type and language

5 ECTS module

English

Objectives

The course will provide the students with a basic knowledge of and competences in dealing with agendas of art-based research and how to create an artistic research design**.** The module also aims at developing an academic discourse, both oral and written, around artistic investigations.

The scope is to develop or participate an art-based research project that, firstly, is based on the academic formulation of an artistic problem and that, secondly, must entail a conceptualization, development, implementation and evaluation of an art-based research design within the field of the art and technology.

As a constrain and for the purpose of coherence with the overall semester frame, the art-based research design will have to apply and make productive performative expressions and methods (for example, theatrical, performance or interactive/participatory forms) as means and/or subject matter of research.

The artistic investigation and its academic conceptualization (including empirical methods of observations and description of findings) will be the subject of the oral examination.

Academic content and conjunction with other modules/semesters

Art-Based Research (ABR) is about doing research through the practice of art. ABR is also one core of the academic legitimacy of ArT: the use of an ArT-practice for investigating selected topics and gaining knowledge. Every academic discipline has its particular research strategies, for example, ethnographic methods, hermeneutical methods, or the so-called scientific method. ABR is about research methods used in and inspired by the arts.

The module will introduce the historical and epistemological foundations, objectives and practice of art-based research and it will discuss the interfaced between art-based research and academic methods.

Scope and expected performance

The module/course contains four lectures given by the module responsible and four seminars, where the students will present and discuss their design, progress, outcome of implementation and evaluation method.

The students must come prepared, which means have read the mandatory texts, created, described, executed and evaluated their design depending on the assignments given for each session.

Workload: 5 ETCS = 5 x 27.5 t = 137 t

The module will be assessed through an external oral examination on the basis of an art-based research project including an academic report/paper (no more than 10 pages per group). The project must be designed and realized in smaller groups of no less than 4 persons.

The module (its lectures and workshops) theoretically and methodically relates to a specific case namely the development of a performance installation lead by Inga Gerner Nielsen and Falk Heinrich. The assignment consists of either an arts-based research design and/or an empirical research, both consisting of research design, implementation and findings.

The aforementioned case is the performance installation *Din fortid er deres fremtid, Dit minde er deres nu,* that is part of educational course *Den Interaktive Performers Talentudvikling* funded by KulturKanten Nordjylland *(**for a short description of the performance see further down). The performance uses interview techniques as performative, interactive methods.

ArT5 students will have the opportunity to

1. fully participate in this course (as part of the module Art-Based Research) developing and performing in the installation and thus creating their art-based research design and find forms of documentation and reflection or
2. devise and apply a research protocol that specifies kinds of observation as empirical method with the aim to analyze specific rehearsals and the final installation

The examination consists of

1. a written part (10 pages per group) that describes, argues and documents the chosen approach to art-based research and presents its findings
2. an oral examination with external censor.

* The performance installation *Din fortid er deres fremtid, Dit minde er deres nu* is the title of a performance installation lead by Inga garner Nielsen: the fictional and narrative framework is that a group of young people of the future (A.D. 2039) need to rebuild memories about today. They will meet in an ancient library and go back to our point in time (A.D. 2018) using performance as a way to embody the past and the future in the present; inspired by literature and by the words of those who made Europe, they want to find themselves in our present and past as we want to find ourselves in their future sensuously contemplating the contemporary possibilities that will sketch the future. Conceptually, these persons are performers, who interact with the audience by immersing the audience/participants in a dialogue about future memories and envisioned pasts thereby helping them to collect and arrange memories from 2018. The performance is durational: people can come and go as they wish, or just look into the installation from the outside at what the performers and the participants are doing. The performance installation is part of educational course *Den Interaktive Performers Talentudvikling* funded by KulturKanten Nordjylland.

Participants

ArT5 students.

Module activities (course sessions etc.)

Lecture 1: **What is arts-based research?**

The lecture will present and discuss various theoretical approaches to arts-based research.

Date and Time:

Lecturer(s): Falk Heinrich

Literature

	Pri. lit.	Sec. lit.	Dig.
McNiff, Shawn (2008) "Art-Based Research" In Knowles, J.G. & Cole, A.L., *Handbook of the arts in qualitative research: perspectives, methodologies,examples, and issues*. London: Sage. P. 29-40	x		yes
Borgsdorff, H. 2010. "The Production of Knowledge in Artistic Research" in Biggs, M. and Karlsson, H. (ed) *The Routledge Companion to Research in the Arts*. London, New York:	x		yes

Lecture 2: How to conduct arts-based research?

The lecture will present a selection of cases and methods of arts-based research with an emphasis on performative and narrative strategies.

Date and Time:

Lecturer(s): Falk Heinrich,

Literature

	Pri. lit.	Sec. lit.	Dig.
Leavy, P., 2009. *Methods meets Art*. New York,	x		yes
Leavy, P., 2009. *Methods meets Art*. New York, London: The Guilford Press. Chap 5.	x		

Lecture 3: Why arts-based research?

The lecture will present and discuss the epistemological and institutional contexts for arts-based research.

Date and Time:

Lecturer(s): Falk Heinrich,

Literature

	Pri. lit.	Sec. lit.	Dig.
Sullivan, Graeme, 2010. *Art Practice as Research - Inquiry in Visual Arts*.	x		yes

Workshop 1: The framework of the module assignment

The module/course contains four lectures given by the module responsible and four workshops, where the students will present and discuss their design, progress, outcome of implementation and evaluation method.

The module and lectures and workshops theoretically and methodically relates to a specific case namely the development of a performance installation lead by Inga Gerner Nielsen and Falk Heinrich. The performance installation *Din fortid er deres fremtid, Dit minde er deres nu,* is part of educational course *Den Interaktive Performers Talentudvikling* funded by KulturKanten Nordjylland *(** for a short description of the performance see further down). The performance uses interview techniques as performative, interactive methods.

The assignment consists of either an arts-based research design and/or an empirical research, both consisting of research design, implementation and findings. The art-based research option necessitates the participation as performer in the performance installation. The second option entails an empirical observation of the making (rehearsals) and the performance proper.

Thus, ArT5 students will have the opportunity to

1. fully participate in this course (as part of the module Art-Based Research) developing and performing in the installation and thus creating their art-based research design and find forms of documentation and reflection or
2. devise and apply a research protocol on the bases of questionnaires and interviews as empirical method with the aim to analyze specific rehearsals and the final installation.

The examination consists of

1. a written part (10 pages per group) that describes, argues and documents the chosen approach to art-based research and presents its findings
2. an oral examination with external censor

* The performance installation *Din fortid er deres fremtid, Dit minde er deres nu* is the title of a performance installation lead by Inga garner Nielsen: the fictional and narrative framework is that a group of young people of the future (A.D. 2039) need to rebuild memories about today. They will meet in an ancient library and go back to our point in time (A.D. 2018) using performance as a way to embody the past and the future in the present; inspired by literature and by the words of those who made Europe, they want to find themselves in our present and past as we want to find ourselves in their future sensuously contemplating the contemporary possibilities that will sketch the future. Conceptually, these persons are performers, who interact with the audience by immersing the audience/participants in a dialogue about future memories and envisioned pasts thereby helping them to collect and arrange memories from 2018. The performance is durational: people can come and go as they wish, or just look into the installation from the outside at what the performers and the participants are doing. The performance installation is part of educational course *Den Interaktive Performers Talentudvikling* funded by KulturKanten Nordjylland.

Date and Time:

Lecturer(s): Falk Heinrich,

Literature

	Pri. lit.	Sec. lit.	Dig.
NN			

Candy, L. and Edmonds, E., 2010. “The Role of the Artefact and Framework for Practice-Based Research” in Biggs, M. and Karlsson, H. (ed) *The Routledge Companion to Research in the Arts*. London, New York: Routledge.			yes

Workshop 2: Initial research design and its problem (formulations)

The workshop consists of presentations and discussions of the student groups’ initial research design and its artistic and academic foundations.

Date and Time:

Lecturer(s): Falk Heinrich

Literature

	Pri. lit.	Sec. lit.	Dig.
*Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues***,** Edited by: J. Gary Knowles & Ardra L. Cole http://methods.sagepub.com/book/handbook-of-the-arts-in-qualitative-research		x	

Workshop 3: Arts-Based Research in Progress

Student presentation of project process and first findings in form of observations, data collections, analysis, etc.

Date and Time:

Lecturer(s): Falk Heinrich

Lecture 4: Evaluating and reflecting arts-based research

The lecture will present and discuss types and modes of arts-based research findings and its notion(s) of knowledge.

Date and Time:

Lecturer(s): Falk Heinrich

Literature

	Pri. lit.	Sec. lit.	Dig.
Biggs; Karlson (2011) "Evaluating Quality in Artistic Research" in Biggs; Karlson (eds) *Routledge Companion to Research in the Arts.* Routledge: London, New York	no of p. x	no of p.	upload yes

Workshop 4: Final presentation of the arts- based research projects

Presentation of the student projects’ findings in terms of artistic and academic knowledge, its formats and dissemination possibilities.

Presentation and clarification of the assessment and its requirements.

Date and Time:

Lecturer(s): Falk Heinrich

Examination

Examination 17

An external oral examination in **Module 17 "Art-Based Research"** (Kunstnerisk forskning).

Form of examination: a)

For the examination students are required to produce an artistic research design and an academic report/paper, which must not exceed 10 pages.

Evaluation: Pass/Fail.

Credits: 5 ECTS

Module 18

Module 18 Multimedia Programming (5ECTS)

Multimedia Programming" (Elective)

5 ECTS

Location

5. Semester

Module coordinator

Markus Löchtefeld

Type/Method and language

Individual or small groups

English

Learning objectives:

During this module, students should acquire:

Basic **knowledge** about

- advanced topics of software development relevant to the design and implementation of multimedia software applications, e.g., software design patterns, programming mobile devices and other embedded systems, network programming, and VR and AR programming

Skills in

- applying a variety of intermediate and advanced software technologies, techniques and methods in the construction of effective and efficient multimedia software applications

Competencies in

- analyzing multimedia software engineering problems and select, apply and evaluate appropriate technologies in developing successful solutions
- applying advanced concepts in multimedia programming and software engineering.

Academic content

The goal of this module is to strengthen a student‟s capacity to participate in multimedia application and software development. This puts the student in a position to take advantage of a significant amount of prior work by integrating a variety of software libraries on a variety of platforms.

Scope and expected performance

5 ECTS credits. 1 ECTS credit = 27,5 hours of work. 5 ECTS = 137,5 hours of work consisting of preparation for course sessions, course participation, group work, exercises, counselling and exams.

Module activities (course sessions etc.)

The aim of this course is to introduce students to the theoretical and practical aspects of robotic art. The course places equal emphasis on both aesthetic and technical concerns so students can develop competencies in the creation of an aesthetically engaging autonomous art work. Students will learn how to design, program and execute a computer-controlled work of art using models such as random walks and Markov chains. Students will also confront issues in planning, coordination, and control that arise when transitioning from computer simulation to the physical world. Students will be provided with materials to develop softrobotic prototypes and to experiment with other prototypes. Prior experience in imperative and object-oriented programming (e.g., C++ or Processing) is required.

There are two assignments: (1) a midterm presentation and (2) the completion of a group-based mini-project incorporating computer-controlled robotics. The mini-project must be accompanied by a written report and oral presentation summarizing the project, method, approach, and conclusions (10 pages maximum).

Lesson 1: Robotic Art

Lecture

Lecturer: Elizabeth Jochum

Origins and development of robotic art from 20th century-present.

This course provides an overview of robotic art from kinetic sculpture to contemporary robotic art.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
“History of Robotic Art” (Eduardo Kac)	11		Yes
Robotics and Art, Computationalism and Embodiment (Penny)	20		Yes
Robotic Creatures: Anthropomorphism and interaction in Contemporary Art (Ghedini; Bergamasco)	6		Yes

Lesson 2: Language of Motion - Theory

Lecture

Lecturer: Elizabeth Jochum

Kinesics, flocking/swarming: What do these behaviors and motions indicate about narrative? What narrative, interactive, or dramaturgical potential can we tap into using these external physical behaviors? This lecture considers the use of flocking and swarming algorithms in robotic art installations.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
A New Kind of Art (Artsbot) (Moura and Pereira)	8		Yes
“So You Think You Can Dance” (Schoellig et al.)	25		Yes
Reynolds, C. W. (1987). Flocks, herds, and schools: A distributed behavioral model. Computer Graphics, 21(4):25-34.		10	Yes
“Generating Music from Flocking Dynamics” (Hueppe et al.)		24	Yes

Lesson 3: Language of Motion - Programming

Lecture + Exercise

Lecturer: Markus Löchtefeld

Introduction to the concepts of turtles and random walks as a means for executing basic motions as well as how to implement those using the Processing programming language.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload

Random walk - Wikipedia, https://en.wikipedia.org/wiki/Random_walk	1		Yes
Abelson, H. and diSessa, A. A. (1980). Turtle Geometry: The Computer as a Medium for Exploring Mathematics. MIT Press.	3		No
Pearson, K. (1905). The problem of the random walk. Nature, 72:294, 318, 342.	3		No
Braitenberg, V. (1984). Vehicles: Experiments in Synthetic Psychology. MIT Press.		3	No

Lesson 4: Language of Motion – Programming II

Lecture + Exercise

Lecturer: Markus Löchtefeld

Composing simple motions with state transition networks (Markov chains). Non-functional animations and simulated interactions.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload
Powell, V. (2014). Markov chains. (http://setosa.io/blog/2014/07/26/markov-chains/index.html)	1		Yes
”Designing Robots with Motion in Mind” (Hoffman and Ju)	32		Yes
"Ontology of Robot Theatre" (Lu)	6		Yes
"Unlocking the expressivity of point lights" - Chris Harrison et al. CHI 2012		10	Yes

Lesson 5+6+7+8: Soft Robotics

Workshop

Lecturer: Jonas Jørgensen (ITU)

Soft robots have the potential to change what we use robots for and challenge how we perceive them. Material scientists, roboticists, computer scientists and biologists are working together to challenge the notion of what a robot can be. Researchers are trying to build sustainable robots of materials that perish after they have completed their task. Students will explore the artistic aspects of soft robots as relational and processual objects through hands-on techniques. The workshop explores not what softness is, but what softness can do.

Literature

	Pri. lit. no of p.	Sec. lit. no of p.	Dig. upload

Rus, Daniela, and Michael T. Tolley. "Design, fabrication and control of soft robots." Nature 521.7553 (2015): 467.	23		Yes
Jørgensen, Jonas. "Appeal and Perceived Naturalness of a Soft Robotic Tentacle." Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction. ACM, 2018.	2		Yes
Jørgensen, Jonas. "Interaction with Soft Robotic Tentacles." Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction. ACM, 2018.	1		Yes
Laschi, Cecilia, et al. "Soft Robotics: Trends, Applications and Challenges." (2016).		15	Yes

Lesson 9: Mid-Term Presentation

Lecture

Lecturer: Elizabeth Jochum & Markus Löchtefeld

Student Presentations of the planned work.

Lesson 10: Final Presentation

Lecture

Lecturer: Elizabeth Jochum & Markus Löchtefeld

Student Presentations of their groups Mini-Project.

Examination

An internal written examination in **Module 18: "Multimedia Programming" (Elective)** (Multimedie programmering (valgfag)).

Form of examination: c)

The examination is a 7-day assignment on a set subject.

Number of pages: the written part must not exceed 10 pages.

Evaluation: pass/fail. In case of a Fail grade, an additional examiner will also evaluate the assignment.

Substitution: the examination may be substituted by satisfactory and active participation in courses, i.e. 80% attendance and submission of all assignments set during the course.

Credits: 5 ECTS

The examination should demonstrate that the student has fulfilled the objectives outlined above.