



AALBORG UNIVERSITY  
DENMARK

Art and Technology, AAU, 5<sup>th</sup> semester 2014

Narratives and Interaction / Narration og interaktion



Figure 1: Raymond Queneau's *Cent mille milliards de poèmes*



**Semester details:**

**School: CAT**

**Study board: ArT & Technology**

**Study regulation: BA Study Program in Art & Technology, The Faculty of Humanities, AAU, September 2012.**

**Semester code: ArT5 - HSA160049**

**Study regulations code: HSA16121**

**Narratives and Interaction**

**Semester Theme**

This semester will focus on narratives and interaction in art and technology practices. A primary focus is the use of archival materials and digital databases in combination with narrative strategies and visual art. The goal is to create responsive/interactive narrative universes and/or physical spaces. Teaching is organized in a number of workshops and related courses aimed at supporting project work.

During the semester courses will teach you the theories, histories and practices of interactivity and narrativity in art and technology and the relation between the two. You will be introduced to different technologies and methods, and learn to analyze, discuss, compare and apply aesthetic and cultural theories and methodologies within the field of interactivity and narrativity.

The semester consists of 4 modules:

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

1. Dramaturgy and Media 1: Narrative theories from literature, film, performance and new media. Course coordinator: Elizabeth Jochum (2 ECTS). Lectures and in-course assignments.
2. Video Editing: Introduction to Experimental Documentation Techniques. Course coordinator: Thomas Busk. Lecturer: Thomas Busk. (1 ECTS)
3. Artistic and Academic Methodology V (Augmented Reality). Course Coordinator SS. (2 ECTS). Lectures and workshops. (Integration of the courses on Artistic and Academic Methodology and Manuscript).

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: Rasmus Stenholt. Lecturers: Rasmus Stenholt, Martin Kraus, Jacob Boesen Madsen, Peter Skotte. (1 ECTS).

Module 17: *Art-Based Research* (5 ECTS) is about concept development strategies and prac-



tice-based research. The module comprises the following courses:

1. Art-based Research: Theory and Practice. Course coordinator: Anete Strand and Ann Charlotte Thorsted.

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

1. Multimedia Programming in Autonomous Art (co-taught with Elizabeth Jochum). Course coordinator: Lance Putnam.

OR

You can attend course(s) offered by other study programs. Both you will need to sign up for (contact the study counselors or Anne Nielsen for further information).



## Narratives and Interaction / Narration og interaktion

The semester project for ArT5 2014 is called:  
*Activating Archives/ Dramaturgical Databases*

Description of the semester project:

A hundred years after cinema's birth cinematic ways of seeing the world, of structuring time, of narrating a story, of linking one experience to the next, have become the basic means by which computer users access and interact with all cultural data."

—Lev Manovich, *Language of New Media*

The focus of this semester is to explore the connections between new media and narrative structures to develop new approaches for organizing information and structuring the viewer's experience. The semester project lies at the intersection of cinema, digital computing, dramaturgy and visual culture.

There are two projects to choose from this semester.

- A. Aalborg City Archives/Danish Emigration Archives. Working together with the historians and archivists at the Aalborg Archives, you will identify a story/theme/narrative to develop using the media tools that you have learned in ArT. You may choose to present this story in any format: installation, sound sculpture, video, film, guided tour, site-specific, interactive database, live performance, computer game, etc.
- B. Interactive City Exploration. You will identify an area/areas of interest in Aalborg and develop an interactive game for a tablet or hand-held device that leads the user on an interactive quest/exploration through the city of Aalborg. You may choose to limit the scope by selecting sites that are unified or share a common theme. You may also choose to incorporate VR or Augmented Reality into your final project. Collaborations with Visit Aalborg and/or the Aalborg Historical Museum are encouraged.

Method and Learning goals:

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 user experiences. The modules are informed by theoretical and practical courses and seminars concerning concept development for 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 coordinator and secretariat assistance:

**Semester coordinator:**

Ståle Stenslie, KOM  
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Elizabeth Jochum, KOM  
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<b>Secretariat:</b>	Anne Nielsen, KOM <a href="mailto:amn@hum.aau.dk">amn@hum.aau.dk</a> +45 9940 9919
<b>Supervisors:</b>	Ståle Stenslie, KOM <a href="mailto:stenslie@hum.aau.dk">stenslie@hum.aau.dk</a> +47 9056 2963  Elizabeth Jochum, KOM <a href="mailto:jochum@hum.aau.dk">jochum@hum.aau.dk</a> +45 52 23 09 02  Falk Heinrich, KOM <a href="mailto:falk_h@hum.aau.dk">falk_h@hum.aau.dk</a> +45 9940 9073
<b>Module 15: Narratives and Interaction (15 ECTS)</b> <ul style="list-style-type: none"><li>• Artistic and Academic Methodology V (Participatory Methods)</li><li>• Dramaturgy and Media I</li><li>• Video Editing</li></ul>	
Supervisors:	Elizabeth Jochum
Teaching staff:	Falk Heinrich, KOM Ståle Stenslie, KOM Thomas T. Busk, MediaLab
<b>Module 16: Mixed Reality Technologies (5 ECTS)</b> <ul style="list-style-type: none"><li>• Performance Technology I</li><li>• Programming Multimedia Systems</li></ul>	
Supervisors:	Rasmus Stenholt, MT <a href="mailto:rs@create.aau.dk">rs@create.aau.dk</a> +45 9940 8077
Teaching staff:	Martin Kraus Jacob Boesen Madsen Peter Skotte
<b>Module 17: ArT-Based Research (5 ECTS)</b> <ul style="list-style-type: none"><li>• Art-Based Research – theory and practice</li></ul>	
Supervisors:	Ann Charlotte Thorsted <a href="mailto:acth@hum.aau.dk">acth@hum.aau.dk</a> +45 2922 8540  Anete Strand <a href="mailto:astrand@hum.aau.dk">astrand@hum.aau.dk</a> +45 9940 7414  Finn Thorbjørn Hansen <a href="mailto:finnth@hum.aau.dk">finnth@hum.aau.dk</a> +45 3070 3910
Teaching staff:	Ann Charlotte Thorsted, Anete Strand, Finn Thorbjørn Hansen
<b>Module 18: Multimedia Programming (Elective) (5 ECTS)</b> <ul style="list-style-type: none"><li>• Multimedia Programming</li></ul>	



Supervisors:	Lance Putnam, MT <a href="mailto:lp@create.aau.dk">lp@create.aau.dk</a> +45 9940 3609
Teaching staff:	Lance Putnam, MT, Elizabeth Jochum, KOM
<b>Departments:</b>	
KOM	Department of Communication and Psychology
AD	Department of Architecture, Design and Mediatechnology (Architecture and Design)
MT	Department of Architecture, Design and Mediatechnology (Mediatechnology)
BYG	Department of Civil Engineering

Module title, ECTS credits and STADS code:		(from study regulations)
Module 15 Narratives and Interaction (Narration og interaction) (15 ECTS)		
HSA550027F		
Location:	ArT5	
Study Board:	ArT & Technology	
Module coordinator:	Elizabeth Jochum, KOM <a href="mailto:jochum@hum.aau.dk">jochum@hum.aau.dk</a> +45 52 23 09 02	
Method of work and language:	Project work in groups. English	
Module contents:	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 narrative installations across a variety of formats and new media, including interactive cinema, video editing, scripting, archival research and databases. Furthermore, the module seeks to establish collaborative processes and projects with external partners.	
Objectives		
In connection with the module, courses may be offered within the following areas: <ul style="list-style-type: none"><li>· Artistic and Academic Methodology V (Participatory Methods)</li><li>· Dramaturgy and Media I</li><li>· Manuscript</li><li>· Video Editing</li></ul>		
<b>Objective:</b> The objective of Module 16: “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, hyper-texts 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.		
Learning objectives:		



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

The module is completed with:

**Examination 15 (see below)** Credits: 15 ECTS

**Courses**

The module project will be supported and contextualized by various courses/workshops:

1. *Narrativity, Dramaturgy and Media I* presents the theoretical framework of the module. It discusses key notions like narrative (and narrativity), fiction/reality, immersion/interaction etc. in a media art context (Elizabeth Jochum and Falk Heinrich)

2. *Video Editing* is an introduction to Adobe Premiere and some cinematographic rules and approaches (Thomas Busk)

3. *Artistic and Academic Methodology* (Interactive Narratives) introduces methodologies in regard to various forms of collaboration (Ståle Stenslie).

**Assignments, submission, and examination**

Due to the project's nature and volume, we recommend that the students work in groups.



The module will be evaluated through an internal combined written and oral examination. The formal requirements are specified in the curriculum.

The practical component of the exam must consist of a functional artefact as specified above (Content 2014: ArT5 Semester project). The examiners will inspect your artefacts in week no. 50 (the exact date will be issued later).

The groups' **project reports** have to be submitted by **December 18<sup>th</sup>** at 10 am.

The module report has to contain:

1. Introduction – field of investigation with a preliminary (broad) problem formulation, artistic ideas
2. Pre-analysis and final artistic problem formulation in regard to the theme, artistic idea and intent, and technology (and possible presentation venue). Presentation of methods and methodologies.
3. Analysis: an investigation of relevant theoretical, social and physical contexts, and technological possibilities and challenges. Empirical investigations.
4. Concept: the analytical findings form the basis for the concept development (concretization of the artistic idea).
5. Design: concrete design possibilities and solutions including an argumentation for the artistic and design choices
6. Implementation: a description of the implementation process (virtual models, the prototype, the final artefact) with emphasis on creative challenges during the implementation process. This part should also contain programming patches/sketches and/or algorithmic architectures.
7. Discussion (post-analysis) of the results and methods used in form of a contextualisation (the project seen in the context of e.g. art and design history/theory, social theory, artistic methodology, practice-based research, etc.).
8. Conclusion: the answer to your problem formulation.

The report may contain photos, sketches/drawings, process videos, questionnaires/user interviews, etc.

**You must produce a short video on you project.**

You have to submit 2 hard copies and 3 set of digital copies (DVD/CD-ROM).

The oral examination is a group examination on the basis of the artefact and the group report. The entire duration of the oral examination is set to 25 min per group member including voting and feed back. The presentation of the group's project is part of the examination. For detailed information, see the annotation to be issued by the beginning of the semester.

**The dates for the oral evaluation are Week 3, January 12<sup>th</sup> to 16<sup>th</sup> 2015.**

#### **Examination 15**

An internal combined written and oral examination in **Module 15 "Narratives and Interaction"**.

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.

In the evaluation of the examination performance, the grade 12 will only be awarded to students who demonstrate that they have fulfilled the objectives for the subject exhaustively or with only few insignificant omissions.

Any re-examination will be held in accordance with the above guidelines on the basis of the revised project report or parts hereof specified by the examiner.

<b>Exam dates:</b>	Oral Evaluation are Week 3, January 12 <sup>th</sup> to 16 <sup>th</sup> 2015
<b>Exhibition dates:</b>	Dec 4-5, 2014
<b>Deadline:</b>	
<b>Hand-in date:</b>	18 December 2014
<b>To:</b>	Anne Nielsen

**Scope and expectations:**

The objective of the ArT5 semester project “Activating Archives/Dramatising Databases” is to design, produce and exhibit an **interactive narrative** based on existing archival and/or database materials. The narrative can be presented and exhibited in different formats, as e.g. installation, mixed reality, computer game, interactive video art, live/networked/virtual performance, site-specific installations, etc.

There are two projects to choose from this semester:

- A. *Aalborg City Archives/Danish Emigration Archives.* Working together with the historians and archivists at the Aalborg Archives, you will identify a story/theme/narrative to develop using the media tools that you have learned in ArT. You may choose to present this story in any format: installation, video, guided tour, site-specific, live/networked/virtual performance interactive database, computer game, etc.
- B. *Interactive City Exploration.* You will identify an area/areas of interest in Aalborg and develop an interactive game for a tablet or hand-held device that leads the user on an interactive quest/exploration through the city of Aalborg. You may chose to limit the scope by selecting sites that are unified or share a common thread or theme. You may also chose to incorporate VR or Augmented Reality into your final project. Collaborations with Visit Aalborg and/or the Aalborg Historical Museum are encouraged.

The final exhibition will be hosted at the ArT Exhibition in December 2014. You may chose to collaborate with a museum or external partner on another date of your choosing, but you are required to exhibit your narrative at the ArT Exhibition. The projects are to be realized as collaborations with the Aalborg City Archives, the Danish Emigration Archives, Aalborg Historiske Museum and/or Visit Aalborg.

*Aalborg City Archives* has almost eight kilometers of shelves with documents, half of which concern Aalborg and the rural district. The other half involves documents from companies, institutions and individuals. It also contains documents, photo collections, and video archives con-



cerning Aalborg Municipality and Danish national collection on emigration history. The archives contain Denmark's largest local photo collection, including sound and video files available online and in an archived database.

*Danish Emigration Archives* is the Danish central collection of emigration history and includes memoirs, letters, manuscripts, photographs and books of Danish emigrants around the world. The goal of the Danish Emigration Archives has since it was founded on the 3th of July 1932 been to protect the part of Danish history that involves countrymen that have travel abroad to a foreign country.

The artistic and methodical objectives are:

1. To create an interactive narrative. This can be done in many ways; critically, poetically, prosaically, inspired by, for example, documentary, games, etc. You are free to employ any artistic medium of your choosing (text, lyrics, acting, performing, sound, music, etc.). The projects must involve technology AND the use of archival and/or database materials.
2. The resulting interactive narrative must in one way or another portray historical dimensions of Aalborg: the population, the economy, the history, geography, architecture, urban conditions, social conditions, political history, visual culture, etc.
3. The choice of theme, narrative format, and visual and auditory components may be a result of collaborations between 'user groups' – in this case the museum archivists or the Visit Aalborg tourist bureau— but this is a decision left to the individual groups.
4. All projects must be documented material for prospective presentations and evaluation. You must include at least one user study in your project report, evaluating the interactive narrative according to qualitative or quantitative methods.

**Prerequisites for participation:**

**Module activities (course sessions etc.)**

**Artistic and Academic Methodology V: Participatory Methods (1 ECTS)**

The purpose of the course is to introduce the student to theories and methods of conceptualizing, preparing and writing narratives and interactive content relevant for the semester theme. The course is made as a two day workshop. It takes a practice-based approach towards realizing an interactive art installation and/or concept.

**Lesson 1:**

**Lecture**

AAM-1: Introduction to Interactivity and its Methods – How to Conceptualize, Textualize and Implement Your Work of Art.  
How do we engage users through Art and Technology? How to use digital media and interactive storytelling to better engage users? The lecture will focus on interactive works of art and how they engage users through interactivity. But how do we define interactivity? And how to apply interactive Augmented Reality as a method to create better users experiences, not just more complicated ones? An overview of different approaches of how ArT works are implemented will be given.



	3 September 10:15-12:00
	Lecturer(s): Ståle Stenslie
	<p>Heim, Michael (1998) <i>Virtual Realism</i>. Oxford University Press.</p> <p>Hauser, Jens (2008) <i>Sk-Interfaces</i>. Liverpool University Press.</p> <p>Isaacs, Julian. <i>Psycho-technology: Its Present &amp; Future</i>.  <a href="http://www.mindmodulations.com/resources/General-psychotech.html">http://www.mindmodulations.com/resources/General-psychotech.html</a> accessed August 2013</p> <p>Svanæs, Dag (2000) Understanding interactivity: steps to a phenomenology of human-computer interaction. Ph.D. dissertation, NTNU, Norway.  <a href="http://www.idi.ntnu.no/~dags/interactivity.pdf">http://www.idi.ntnu.no/~dags/interactivity.pdf</a> accessed August 2013.</p> <p>Stenslie, S. <i>Virtual Touch</i>. 2010. Page 232, section: 6.3.2.</p> <p>Grau, Oliver (2003) <i>Virtual Art – From Illusion to Immersion</i>. The MIT Press.</p>
Lesson 2:	Lecture
	<p>AAM-2: AUGMENTED IMMERSION</p> <p>What is immersion and how do we use it to create encompassing, even holistic user experiences? The lecture will present and discuss some historical pieces, starting with media archeological approaches, presenting the historical field of Virtual Reality onwards to contemporary means of creating Mixed and Augmented Realities. Basic technologies and techniques of making AR experiences will be introduced. All students are asked to bring their own Smartphone.</p> <p>Assignment: Present one example of immersive art from Grau's book, or an Augmented Reality piece by your choice. Length: max 1. Page.</p>
	15 September 13:30-15:15
	Lecturer: Ståle Stenslie
	Benford, Steve & Giannachi, Gabriella (2011) <i>Performing Mixed Reality</i> . MIT Press.
Lesson 3:	Lecture and Workshop
	<p>AAM-3: CONCEPT: AUGMENTING YOUR STORY</p> <p>The lecture will be held as a workshop where the various groups develop a concept with a storyboard for presentation and discussion in class.</p> <p>Assignment: Groupwise prepare a storyboard with a technique of your choice. Present and discuss in class.</p> <p>Assignment: realize your storyboard project and document it</p>
	15 September 15:30-17:15
	Lecturer: Ståle Stenslie
	set and recommended readings
	slides and other resources
Lesson 4:	Workshop
	<p>AAM-4: Final Presentation</p> <p>Each group will present their final AR work in class for discussion and critique.</p>
	23 September 15:30-17:15
	Lecturer: Ståle Stenslie
	set and recommended readings



	slides and other resources
<b>Narrativity, Dramaturgy and Media I (3 ECTS)</b>	
Lesson 1:	Lecture and in-class assignment
	NDMI-1 <i>Cultivating Humanity: Narrative &amp; the Imagination from Aristotle to the present</i> This course introduces students to the theory and study of narrative and narrative structure. Special focus will be given to literary theory and how these concepts translate to film theory and visual art theory, and how they influence dramaturgies across different fields.
	3 September 13:30-15:15
	Lecturer(s): Elizabeth Jochum
	<i>Poetics</i> (Aristotle) sections. "Death of the Author" "From Work to Text" (Roland Barthes) "The Narrative Imagination" (Martha C. Nussbaum)
Lesson 2:	Lecture
	NDMI-2: <i>Narrative Cinema: from D.W. Griffith to Deren to Brackage</i> . This course considers approaches to narrative in film and visual art. How did early filmmakers explore new media to creative alternative narrative structures through experimentation and exploration? What do these structures reveal about the nature of perception, and how does the filmic medium shape the production and interpretation of meaning in other areas of visual culture? In-class student presentations on relevant artists (10 minutes, including slides, video, audio, one-page written summary).
	4 September 13:30-15:15
	Lecturer(s): Elizabeth Jochum
	Reading: <i>The History of Early Cinema</i> (Manley) <i>Film Analysis "Battleship Potemkin"</i> (Bill Nichols) <i>Film Analysis "The Birth of a Nation"</i> (Daniel Bernardi) <i>Montage of Attractions</i> (Sergei Eisenstein)  Viewing: <i>Birth of a Nation</i> (1915) D. W. Griffith <i>Battleship Potemkin</i> (1925) Eisenstein <i>Man With a Movie Camera</i> (1929) Dziga Vertov <i>Meshes of the Afternoon</i> (1943) Maya Deren <i>At Land</i> (1944) Maya Deren <i>Mothlight</i> (1963) Stan Brakhage <i>Water for Maya</i> (2000) Stan Brakhage
Lesson 3:	Workshop
	NDMI-3 Introduction to archives and databases
	Tuesday 9 September 14:30-16:15  LOCATION: Arkivstræde 1, 9000 Ålborg 99 31 42 20
	Lecturer(s): Elizabeth Jochum



	This workshop will take place at the Aalborg City and Danish Emigration archives. Arkivstræde 1, 9000 Ålborg. Students will receive a tutorial from historians and archivists on how to conduct archival research, and will learn the extent of the databases and collections available to them. Time will be allotted for discussion and brainstorming for Semester Project ideas.
	slides and other resources
Lesson 4:	Lecture and film screening
	<i>NDMI-4: Database/Interface: Soft Cinema and Ambient Narratives</i> How have cinematic ways of seeing the world and narrative structures influence new media art? This lecture considers database and archival approaches to filmmaking, and considers the aesthetic potential of databases and archives for interactive methods in film and new media art. In-class student presentations on relevant artists (10 minutes, including slides, video, audio, one-page written summary).
	16 September 13:30-15:15
	Lecturer(s): Elizabeth Jochum
	Readings: <i>The Language of New Media</i> (Lev Manovich) Ch 1 "What is New Media?" and Chapter 5 "The Database" Review/ <i>Soft Cinema: Navigating the Database</i> (Steve Anderson) <i>The Moving Image</i>  Viewing: <i>Texas</i> (2002) Lev Manovich and DJ Spooky <i>Mission to Earth</i> (2003-2004) Lev Manovich <i>Absences</i> (2005) Andreas Kratkey
Lesson 5:	Lecture and in-class activity
	<i>NDMI 5: Visual Narrative and Performance: Film, digital and the live.</i> This class looks at narrative and interaction techniques by visual artists working with film, photography, narrative and performance. How do artists use narrative and interaction methods to create new forms and experiences? Some artists we will consider are Cartier-Bresson, Barbara Probst, Joan Jonas ( <i>Mirage</i> ), Tacita Dean ( <i>Film</i> ), Rimini Protokoll ( <i>Call Cutta in a Box</i> ), and Punch Drunk ( <i>Sleep No More</i> ), Hotel Pro Forma ( <i>Undercover</i> ). In-class student presentations on relevant artists. In-class student presentations on relevant artists (10 minutes, including slides, video, audio, one-page written summary).
	18 September 13:30-15:15
	Lecturer(s): Elizabeth Jochum
	Reading: <i>On Defining Visual Narratives</i> (Sherline Pimenta, Ravi Poovaiah) <i>Performing Histories: Archiving Practices of Rimini Protokoll</i> (Solveig Gade) <i>Surrogate Stages: Theatre, Performance and the Challenge of New Media</i> (Balme) <i>Mirage</i> (Joan Jonas)
Lesson 6:	Lecture
	<i>NDMI 6: Performing the Archive/ Database as Dramaturgy</i> The archive is increasingly recognized as a critical means of communication in mediated societies. What practices/approaches can be applied to activating or staging the archive,



	rescuing archival materials from static, physical documentation to something living, breathing and interactive? This course considers how artists use archival material in media art practice, and introduces concepts such as techno-imagination, participatory aesthetics, and literal performance and dramaturgies of the real. In-class student presentations on relevant artists. In-class student presentations on relevant artists (10 minutes, including slides, video, audio, one-page written summary).
	23 September 10:15-12:00
	Lecturer(s): Elizabeth Jochum
	<p><i>Undercover by Hotel Pro Forma</i> (Annelis Kuhlmann)  <i>The Archive is Here and Now</i> (Laura Luise Schultz)  <i>Performing the Archive</i> (Simone Osthoff)  <i>Dramaturgy of the Real</i> (Carol Martin)</p> <p><b>Required Viewings:</b>  <i>Hostage: The Bachar Tapes</i> (Atlas Group)</p>
Lesson 7:	Lecture
	<p>NDMI 7: <i>Interactivity and Dramaturgy</i>  The lecture introduces, firstly, relevant notions of interaction and interactivity, secondly, various dramaturgical models of interactive narratives and, thirdly, work methods such as pitch, manuscript and storyboarding relevant for interactive narratives.</p> <p><b>Read the mandatory text!</b>  Each group has to prepare and present at the following lecture 8 a pitch document that conveys the group's idea of an interactive narrative</p>
	13 October 10:15-12:00
	Lecturer(s): Falk Heinrich
	<p>Readings:  Ryan, Marie-Laure, 2001. <i>Narrative as Virtual Reality</i>. Baltimore: John Hopkins University Press (chapter 3, 7, 8)  (available as e-book via Auboline)</p> <p>Further Reading:  Manovich, Lev, 2001. <i>Language of New Media</i>. Cambridge MA: MIT Press (p 226ff)</p> <p>Ryan, Marie-Laure, 2008. "Interactive Narratives, Plot Types and Interpersonal Relations", ICIDS '08 Proceedings of the 1st Joint International Conference on Interactive Digital Storytelling: Interactive Storytelling</p> <p>Crawford, Chris, 2005 <i>On interactive storytelling</i>. Berkeley: New Reader Games (chapter 3</p>
Lesson 8:	Workshop
	<p>NDMI 8: <i>Interactive narratives: pitch, manuscript and storyboarding</i>  On the basis of the student groups' specific story world ideas, the groups will produce, present and discuss pitch documents, manuscripts and storyboards.</p> <p>Exercise: The student groups have to prepare a pitch documents prior to the workshop and present it at the workshop. During the workshop, the students will work with manuscript and storyboarding techniques relevant to their projects.</p>



	15 October 10:15-12:00
	Lecturer(s): Falk Heinrich
	<p>Readings: Katz, S. 1991. <i>Shot by Shot</i>. Studio City, CA: Michael Wiese Productions Bruce Block, 2001. <i>The visual story</i>. Focal Press</p> <p>Further Reading: <i>Begleiter, Marcie. 2001. From word to image</i>. Studio City, CA: Michael Wiese Productions</p>
<b>Video Editing (1 ECTS)</b>	
Lesson 1:	Workshop
	VE-1: Introduction to the camera
	6 October 8:15-10:00
	Lecturer(s): Thomas T. Busk
Lesson 2:	Workshop
	VE-2: Introduction to the camera
	6 October Time 10:15-12:15
	Lecturer(s): Thomas T. Busk
Lesson 3:	Lecture and activity
	VE-3: Avid Media Composer
	8 October 13:00-14:45
	Lecturer(s): Thomas T. Busk
	<u>Readings: <i>Avid Media Composer 6.5 vejledning AAU 2014</i></u>
Lesson 4:	Lecture and activity
	VE-4: Avid Media Composer
	8 October Time 15:00-17:00
	Lecturer(s): Thomas T. Busk
	Readings: <i>MediekompndieMediaLab</i> (Busk et al).



Module title, ECTS credits and STADS code:		(from study regulations)
Module 16 Mixed Reality Technologies (Mixed reality teknologi) (5ECTS) <i>HSA550028F</i>		
Location:	ArT5	
Study Board:	ArT & Technology	
Module coordinator:	Rasmus Stenholt, MT <a href="mailto:rs@create.aau.dk">rs@create.aau.dk</a> +45 9940 8077	
Method of work and language:	Individual or small groups. English	
Module contents:	The module is comprised of theoretical and practical courses and seminars within technologies for construction of performative environments or installations The objective of Module 16 “Technologies for performative environments and installations” is to introduce the students to theories and methods of technologies in relation to the creation of interactive or re-active narratives and performances that merge virtual and material spaces.	
Objectives		
In connection with the module, courses may be offered within the following areas: <ul style="list-style-type: none"><li>• Performance Technology I</li><li>• Programming Multimedia Systems</li></ul>		
Learning objectives: During this module, students should acquire:		
Basic knowledge about <ul style="list-style-type: none"><li>• basic theories and methods for fiducial recognition and tracking</li><li>• basic theories and methods for natural object recognition and tracking</li><li>• basic theories and methods for development of augmented and virtual reality systems</li><li>• basic theories and methods for human motion capture and tracking</li><li>• mapping between real and virtual world environments</li><li>• methods for measurement of experiences and presence in different environments</li></ul>		
Skills in <ul style="list-style-type: none"><li>• applying methods for development of augmented, mixed and virtual environment</li><li>• applying methods for tracking of fiducial and natural objects</li><li>• applying methods for automated analysis and recognition of human motion</li><li>• analysis of mapping between real, augmented, mixed or virtual reality environments</li><li>• analysis of user experiences and presence in augmented, mixed or virtual reality environments</li></ul>		
Competencies in <ul style="list-style-type: none"><li>• analysing and constructing augmented, mixed and virtual environment</li><li>• analysing and constructing human motion capture systems</li><li>• analysing and constructing systems that map information between real, augmented, mixed or virtual reality environments</li></ul>		
The module is completed with:		





<b>Examination 16</b>	
<p>An internal written examination in <b>Module 16: “Mixed Reality Technologies”</b></p> <p>Form of examination: c)</p> <p>The assignment is evaluated by one examiner and awarded a pass/fail grade.</p> <p>Number of pages: the written work must not exceed 10 pages.</p> <p>Evaluation: pass/fail. In case of a Fail grade, also a second examiner will evaluate the assignment.</p> <p>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.</p> <p>Credits: 5 ECTS</p> <p>The examination should demonstrate that the student has fulfilled the objectives outlined above.</p>	
<b>Exam dates:</b>	Deadline for hand-in of mini-project: 12 November; Exam: Week 47 (November 17 and November 21 <sup>st</sup> )
<b>Exhibition dates:</b>	
<b>Deadline:</b>	
<b>Hand-in date:</b>	Deadline for hand-in of mini-project: 12 November; Exam: Week 47 (November 17 and November 21 <sup>st</sup> )
<b>To:</b>	Anne Nielsen
<b>Scope and expectations:</b>	
<p>The project for this module is expected to comprise a small report and an artistic product. This product may be part of the semester’s main product. Both the report and the product are to be made in a group. In the event that the main semester project is used as case for this module, then this group should be identical to the main semester project group.</p> <p>The project should address all relevant aspects taught in this module, i.e. the technologies used, how it fits within the different definitions of mixed reality, how it is implemented, and how it will be evaluated.</p>	
<b>Participants:</b>	
<b>Prerequisites for participation:</b>	
<b>Module activities (course sessions etc.)</b>	
<b>Programming Multimedia Systems (2 ECTS)</b>	
<b>Lesson 1:</b>	Lecture with subsequent exercises
	<p>PMS 1: Introduction to Mixed Reality</p> <p>Content: Introduction to the course, practical issues, the concepts of MR, AR, VR Installation of Unity. Examples of MR projects will be given.</p> <p>Exercises: Install, run, and test Unity. Find ideas for new MR applications based on the presented examples.</p>
	15 September 9-12
	Lecturer: Rasmus Stenholt
	Readings: TBA



Lesson 2:	Lecture with subsequent exercises
	<p>PMS 2: Unity introduction &amp; video mapping</p> <p>Content: Introduction to editing 3D scenes and scripts in Unity. Projection of virtual 3D scenes onto real projection screens.</p> <p>Exercises: Design and implementation of a virtual scene that reflects features (e.g. windows) of a real wall or building onto which the scene is projected.</p>
	Date and time: 22 September 9-12
	Lecturer: Martin Kraus
	Readings: TBA
Lesson 3:	Lecture with subsequent exercises
	<p>PMS 3: Head and skeleton tracking</p> <p>Content: Introduction to skeleton tracking with the Kinect sensor in Unity.</p> <p>Exercises: Design and implementation of a virtual scene that is projected for a head-tracked viewer such that it appears to be located in the real world behind or in front of the real projection screen.</p>
	Date and time: 29 September 12:30-15:30
	Lecturer: Martin Kraus
	Readings: TBA
Lesson 4:	Lecture with subsequent exercises
	<p>PMS 4: Modelling and rigging of 3-D characters</p> <p>Content: Learn how to rig and correctly name a skeleton and its parts. Then model a 3D character and apply it to the skeleton for use with the Kinect/Unity motion capture.</p> <p>Exercises: Design and implementation of a rigged virtual character that is controlled in Unity by skeleton tracking with the Kinect sensor.</p>
	Date and time: 2 October 9-12
	Lecturer: Peter Skotte
	Readings: TBA
Lesson 5:	Lecture with subsequent lab demos
	<p>PMS 6: Tracking systems and head-mounted displays.</p> <p>Content: Introduction to stereo graphics, head-mounted displays and optical tracking. Visit to the AVA Lab.</p>



	Exercises: Come up with ideas for a purely virtual art installation incorporating an HMD.
	Date and time: 13 October 9-12
	Lecturer: Rasmus Stenholt
	Readings: TBA
Lesson 6:	Lecture with subsequent exercises
	<p>PMS 5: Augmented virtual mirrors</p> <p>Content: Augmenting the video stream of a Kinect sensor with a virtual scene in Unity.</p> <p>Exercises: Design and implementation of a virtual scene that is controlled by skeleton tracking and augments the video stream of the tracked user.</p>
	Date and time: 20 October 9-12
	Lecturer: Martin Kraus
	Readings: TBA
Lesson 7:	Lecture with subsequent exercises
	<p>PMS 7: Augmented reality on mobile devices</p> <p>Content: Overview of current typical mobile AR solutions. Introduction of development using Qualcomm and Unity, and introduction to Layar.</p> <p>Exercises: Come up with ideas for incorporating augmented reality into an art installation, using Qualcomm or Layar. Implement a prototype of one of the ideas using either Layar or Qualcomm.</p>
	Date and time: 27 October 9-12
	Lecturer: Søren Eskildsen
	Readings: TBA
Lesson 8:	Lecture with subsequent exercises
	<p>PMS 8: Evaluation &amp; Presence</p> <p>Content: User evaluations, evaluation metrics, questionnaires, presence.</p> <p>Exercises: Find out how your project can be evaluated using one or more of the presented methods.</p>
	Date and time: 3 November 9-12
	Lecturer: Rasmus Stenholt
	Readings: TBA



Module title, ECTS credits and STADS code:		(from study regulations)
Module 17 ArT-Based Research (Kunstnerisk forskning) (5 ECTS)		
HSA550029B		
Location:	ArT5	
Study Board:	ArT & Technology	
Module coordinator:	Ann Charlotte Thorsted, <a href="mailto:acth@hum.aau.dk">acth@hum.aau.dk</a> , +45 2922 8540 Anete Strand, <a href="mailto:astrand@hum.aau.dk">astrand@hum.aau.dk</a> , +45 9940 7414	
Method of work and language:	Individual or smaller groups in relation to course activities. English	
Module contents:	The module “Art-Based Research” focuses on the meeting between artistic experimental practices as academic methods. These can be artistic installations or exhibitions seeking to generate empirical data of various kinds. The installation should be conceptualized and realized as a methodical means in relation to a set or self-chosen artistic problem formulation. Emphasis will be firstly on practical planning and realization of the installation and, secondly, on the collection and interpretation of the empirical data.	
In connection with the module, courses may be offered within the following area: <ul style="list-style-type: none"><li>• Art-Based Research – theory and practice</li></ul>		
<b>Learning objectives:</b> During this module, students should acquire:		
Basic <b>knowledge</b> about <ul style="list-style-type: none"><li>▪ art-based research</li><li>▪ planning, curating and realizing an art-based research installation or exhibition</li></ul>		
<b>Skills</b> in <ul style="list-style-type: none"><li>• stating a technologically relevant art-based research problem</li><li>• creating concepts for artistic research experiments</li><li>• applying testing methods</li><li>• employing methods of practical planning, realization, and evaluation of art-based research installations</li></ul>		
<b>Competencies</b> in <ul style="list-style-type: none"><li>• developing and realizing art-based research project in the field of art and technology</li></ul>		
The module is completed with:		
<b>Examination 17</b>		
An external oral examination in <b>Module 17 “Art-Based Research”</b> 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		



Any re-examination will be held in accordance with the above guidelines on the basis of the revised report or parts hereof specified by the examiner.

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

<b>Exam dates:</b>	Nov. 26 <sup>th</sup> at 8.15-16.15.
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<b>Deadline:</b>	
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<b>Hand-in date:</b>	Nov. 13 <sup>th</sup> at 10.00
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<b>To:</b>	Moodle / Anne Nielsen
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**Scope and expectations:** This module prepares students to conduct art-based research using the FIE model and practices in material storytelling. The FIE model is a concept to support the participants in their navigation in unpredictable processes. The focus is on play as a new *social technology* (Jöhncke, Svendsen, & Whyte, 2004) and a concrete playful intervention form centered around the establishment of a 'social field' meaning a space and time of a certain quality, collective sensitivity, creativity, attention, intention and engagement. An effort will be made to tie the FIE model with the semester projects.

**Prerequisites for participation:** None.

**Module activities (course sessions etc.)**

## Art-Based Research – theory and practice (2 ECTS)

Workshop 1:	Workshop-based teaching Location: Material Story Lab, Nordkraft, lok. 10.16
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ABR 1 and 2 From the perspective of art as research practice this first workshop will discuss three characteristics of art-based research: 1) a research approach employing <i>other ways of knowing</i> , 2) a <i>performative research</i> practice, 3) a <i>speculative design</i> practice of producing <i>shelters of exposure</i> . In light of that we will introduce and train the use of one such research practice; Object theatre (Strand 2014) to elaborate relevant art-based research problem formulations related to the semester theme and students projects.
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Date and Time: 27 October 13:30-16:15 (3 lecture-hours)
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Lecturer(s): Ann Charlotte Thorsted, Anete Strand
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**Required readings:**

Haseman, Brad (2006) A Manifesto for Performative Research. *Media International Australia incorporating Culture and Policy, theme issue "Practice-led Research"*(no. 118):pp. 98-106. (8 pages)

Heron, J. & Reason, P. (2006). The Practice of Co-operative Inquiry: Research 'with' rather than 'on' People. P. 144-154. In Reason, P. & Bradbury, H. (2006). *Handbook of Action Research*. Sage Publications. (11 sider)



	<p>McNiff, S. (2008). Art-Based Research. <i>Handbook of the ARTS in Qualitative Research</i>. P. 29-40. Sage. (11 pages)</p> <p>Mitter, N. (2006) <i>Speculative Design - creative possibilities and critical reflection</i>. Paper at Graduate Media Design Programme, Art Center College of Design. (8 pages, will be made available at Moodle)</p> <p>Strand, A. M. C &amp; Poulsen, S. B. (2014). A creative designerly touch. Nurturing transformation through creativity in the meaning-mattering of design processes. In <i>Academic Quarter (Vol. 8) 2014</i>. (17 pages, in review, and will be made available at Moodle)</p> <p><b>Suggested Readings:</b> Jørgensen, K. M. &amp; A. M. C. Strand (2012). Stories of Material Storytelling. I: Jemielniak &amp; A. Marks (Eds.). <i>Managing dynamic technology-oriented business: High-tech organizations and work places</i>. Hershey, Pennsylvania (USA): IGI global. 2012. pp. 171-191. (20 pages)</p> <p>Strand, A. M. C. (2014). Grandmas Dress(code)practices diffracted through the apparatus of material storytelling. In Boje, D. M. &amp; Henderson, T. <i>Being Quantum. Storytelling and Ontology in the Age of Antenarratives</i>. Newcastle: Cambridge Scholar Publishing (In Press, og gøres tilgængelig i moodle). (40 pages)</p>
Workshop 2:	Workshop-based teaching
	<p>ABR 3, 4, &amp; 5</p> <p>In this second workshop we continue to work from day 1 by introducing FIE as an art-based research approach. Through out the day the five steps of this approach will be explored through the continuous work with the individual research problems and here FIE will function as framework for the planning, curating and realizing of an art-based research installation or exhibition.</p>
	Date and Time: 28 October 11:15-16:15 (5 lecture-hours)
	Lecturer(s): Ann Charlotte Thorsted, Anete Strand
	<p><b>Required Readings:</b></p> <p>Thorsted, A. C. (2014). Play as mediator for creativity in a PBL or PpBL process. <i>Academic Quarter (Vol. 8) 2014</i>. (14 pages, in review, will be made available at Moodle)</p> <p>Øksnes, M. (2013). "We sneak off to play what we want!". In Ryall, E., Russell, W. &amp; MacLean, M. (Eds.) <i>The Philosophy of Play</i>. Routledge. (p. 141-151)</p> <p><b>Suggested Readings:</b> Sandelands, L. (2010). The Play of Change. <i>Journal of Organizational Change Management</i>, 23. P. 71-86. (15 pages)</p> <p>Bateson, P. &amp; Martin, P. (2013). <i>Play, Playfulness, Creativity and Innovation. People and organizations</i>. P. 77-88. Cambridge. (11 pages)</p>



Workshop 3:	Individual study
	<p>ABR 6</p> <p>In this third workshop the students will individually continue their work with their research problem in the facility of Material Story Lab</p>
	<p>Date and Time: 29 October 13.30-16.15 (Location: Material Story lab in Nordkraft lok. 10.16.)</p>
	Lecturer(s): Ann Charlotte Thorsted, Anete Strand
	Readings: none
Workshop-day four 4:	Workshop-based teaching
	<p>ABR 7 and 8</p> <p>In this fourth and final workshop we will discuss the possibilities of empirical data collection and interpretation through the art-installation and the artistic research design, and as part of that we will elaborate the appropriate data sources for the research problem inspired by Rapley's notion of <i>data-archive</i> and discuss through Barad's (2007) notion of <i>phenomenon-producing-apparatus</i> the implications for data interpretation. As a supplement to this the approach <i>multimodal constituency analysis</i> will be presented as a productive method of analysis and interpretation.</p>
	Date and Time: 30 October 9:15-12:00 (3 lecture hours)
	Lecturer(s): Ann Charlotte Thorsted, Anete Strand
	<p><b>Required Readings:</b></p> <p>Rapley, T. (2007) <i>Doing Conversation, Discourse and Document Analysis</i>. Chap. 2 pp. 8-22. The Sage Qualitative Research Kit. Sage Publications. (14 pages)</p> <p>Loevgaard, K. og Strand, A. M. C. (2014). Quantum Objectivity – Object(act)ivity as an onto-semantic doing. In Boje, D. M. &amp; Henderson, T. (2014). <i>Being Quantum. Storytelling and Ontology in the Age of Antenarratives</i>. Newcastle: Cambridge Scholar Publishing (In Press, will be made available at Moodle). (18 pages)</p> <p>Højgaard, L. &amp; Søndergaard, D. (2009). <i>Analyzing multimodal constitutive processes in empirical research</i>. 3. ed. Kbh : Museum Tusculanum, 2009. p. 1-37. (Working paper, will be made available at Moodle) (37 pages)</p>



## Module 18 Multimedia Programming (Elective) (Multimedie programmering (valgfag)) (5 ECTS)

### HS AVB0030D

\* This module may be offered by the board of study depending on e.g. the amount of students enrolled or other relevant circumstances.

<b>Location:</b>	ArT5
<b>Study Board:</b>	ArT & Technology
<b>Module coordinator:</b>	Lance Putnam, MT <a href="mailto:lp@create.aau.dk">lp@create.aau.dk</a> +45 9940 3609
<b>Method of work and language:</b>	Individual or small groups. English
<b>Module contents:</b>	

### Objectives

In connection with the module, courses may be offered within the following area:

- Multimedia Programming

### 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

The module is completed with:

### Examination 18

### Examination 18

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

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. One examiner evaluates the assignment. 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 34





The examination should demonstrate that the student has fulfilled the objectives outlined above.	
<b>Exam dates:</b>	18 November 2014 10:15-13:15
<b>Exhibition dates:</b>	18 November 2014 10:15-13:15
<b>Deadline:</b>	
<b>Hand-in date:</b>	21 November 2014 17:00
<b>To:</b>	Anne Nielsen
<b>Scope and expectations:</b>	
<p>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, flocking, and Markov chains. Students will also confront issues in planning, coordination, and control that arise when transitioning from computer simulation to the physical world. There are two assignments: (1) a midterm sketch/study and one-page summary and (2) the completion of a group-based mini-project incorporating computer-controlled robotics. Students will be provided with robots to experiment with (the Arduino robot and Sphero mobile robot), but are invited to develop their own design or robotic prototypes. Prior experience in imperative and object-oriented programming (e.g., C++ or Java) is required. There are two assignments: (1) a midterm sketch/study and one-page written summary 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).</p> <p>Students will be provided with robots to experiment with (the Arduino robot and Sphero mobile robot), but are invited to develop their own design or robotic prototypes.</p>	
<b>Participants:</b>	
<b>Prerequisites for participation:</b> Prior experience in imperative and object-oriented programming (e.g., C++ or Java) is required.	
<b>Module activities (course sessions etc.)</b>	
<b>Multimedia Programming (2 ECTS)</b>	
Lesson 1:	Lecture with subsequent exercises
	MMP-1: Robotic art and autonomous systems Origins and development of robotic art from 20 <sup>th</sup> century-present. This course provides an overview of robotic art from kinetic sculpture to contemporary robotic art.
	7 October 10:15-12:00
	Lecturer: Elizabeth Jochum



	Required Readings: "History of Robotic Art" (Eduardo Kaz) "Robot and Cyborg Art" (Jack Burnham) "The Machine as Autonomous Performer" (Bown et al.)
Lesson 2:	Lecture with subsequent exercises.
	MMP-2: Robot Communications Sending and receiving messages to and from the robot.
	9 October 10:15-13:15
	Lecturer(s): Lance Putnam
	Assignments: Programming exercises based on session. Required Readings:
	slides and other resources
Lesson 3:	Lecture with subsequent exercises.
	MMP-3 Language of Motion I Animation, interpolation, turtles and random walks.
	21 October 10:15-13:15
	Lecturer: Lance Putnam
	Assignments: Programming exercises based on session. Required Readings: Abelson, H. and diSessa, A. A. (1980). Turtle Geometry: The Computer as a Medium for Exploring Mathematics. MIT Press. Pearson, K. (1905). The problem of the random walk. Nature, 72:294, 318, 342. Optional Literature: Braitenberg, V. (1984). Vehicles: Experiments in Synthetic Psychology. MIT Press.
Lesson 4:	Lecture with subsequent exercises
	MMP-4 Language of Motion II 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.
	23 October 10:15-12:00
	Lecturer: Elizabeth Jochum
	Required Readings: <i>Control and Art</i> (Spring, 2013) "So You Think You Can Dance" (Schoellig et al.) "Generating Music from Flocking Dynamics" (Hueppe et al.) "endo/exo - Making Art and Music with Distributed Computing" (Correll and Theodore)
	<i>Swarm Wall</i> : <a href="http://correll.cs.colorado.edu/?page_id=2361">http://correll.cs.colorado.edu/?page_id=2361</a> <i>Endo/Exo</i> : <a href="http://vimeo.com/67034781">http://vimeo.com/67034781</a>



	<i>Quadrotor Show:</i> <a href="https://www.youtube.com/watch?v=cseTX_rW3uM">https://www.youtube.com/watch?v=cseTX_rW3uM</a>
Lesson 5:	Mid term presentations
	MMP-5 In-class presentations of mid-term sketch/studies with evaluation and feedback. One page summaries due.
	4 November 10:15-13:15
	Lecturers: Elizabeth Jochum, Lance Putnam
Lesson 6:	Lecture with subsequent exercises
	MMP-6 Markov chains and "Acting for Robots" Composing simple motions with state transition networks (Markov chains). Non-functional animations and simulated interactions.
	6 November 10:15-13:15
	Lecturers: Lance Putnam, Elizabeth Jochum
	Assignments: Programming exercises based on session. Required Readings: "Playing Catch and Juggling with a Humanoid robot" (Kober et al.) "Portrait drawing by Paul the robot." (Tresset et al.) "Designing Robots with Motion in Mind" (Hoffman and Ju)
	Throw and Catch: <a href="https://www.youtube.com/watch?v=83eGcht7lil">https://www.youtube.com/watch?v=83eGcht7lil</a> 5 Robots Named Paul: Ars electronica
Lesson 7:	Workshop
	MMP-7: Workshop with Ian Ingram
	14 November 10:15-13:15
	Lecturers: Elizabeth Jochum and Lance Putnam
	Readings: TBA
Lesson 8:	Final Exam/Presentations
	MMP-8: Final Presentations and in-class demonstrations. Students will present their work in class.
	18 November 10:15-13:15
	Lecturers: Lance Putnam and Elizabeth Jochum
	NA



## Module 22 “Electives” (Valgfag)

Location of module: 5<sup>th</sup> and/or 6<sup>th</sup> semester

Credits: 5 ECTS

Method of working: Individual, or project work in groups

Module contents: The contents of the module will vary according to the academic profile pursued by the student. The contents will be shaped by the modules chosen by the students from the list offered by the various study programs at the faculties of engineering, science and medicine, social sciences, and humanities. Thus, electives offered may be of the following character and academic contents:

- Mathematics
- Nordic architecture, design and art
- Advanced programming
- Advanced aesthetic theory
- Advanced theory of architecture and design
- Advanced theory of science
- Advanced communication and/or media theory
- Advanced interaction technology
- Rhetoric
- Entrepreneurship and Economics

The Board of Studies must approve electives selected by the students no later than mid-August. In connection with the approval of electives, students must state the academic profile they wish to pursue.

General objectives:

That the students select one or more subjects relevant to their study program, and which may support their specific academic profile and specialization thereof – including any further academic perspective the students may have in relation to possible choice of MA program.

Specific objectives:

See the study program regulations of the module in question.

The module is completed with:

### **Examination 22**

The examination will be conducted in accordance with the examination procedure laid down by the Board of Studies in question and the study program regulations of the elective(s)/elective modules in question.

In case the Board of Studies of Art & Technology offers the elective module, the examination is internal, and the following will apply:

Form of examination: c)

The examination is a free assignment, which is evaluated by one examiner and awarded a pass/fail grade.

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



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Evaluation: pass/fail. One examiner evaluates the assignment. In case of a Fail grade, an external examiner will also 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 in the study program regulations of the module in question.