

# ATCM 3395.001 INTERACTIVE MEDIA INSTALLATION

*Topics in Arts Technology and Emerging Communication*

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## COURSE INFORMATION

Class Time: Thursdays, 1:00pm - 3:45pm

Location: ATC 2.914

## Contact Information

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Office Hours: Mondays, 9am-1pm in ATC 1.915

30 minute appointments via  
via calendly (by appointment only)

<https://calendly.com/ksweet001/30>



SKALAR by Bauder & Ray (2020)

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## Course Description:

(3 semester credit hours)

From the Course Catalog “Study of principles, techniques, and/or theories related to Arts, Technology, and Emerging Communication. May be repeated for credit as topics vary.”

This course explores multisensory, immersive, and interactive media installation. Areas of investigation include concept in interaction design and immersion, developing interactive artworks (using microcontrollers, sensors, and actuators), and using visual scripting languages (TouchDesigner) for real-time processing and graphics.

## In this course we will:

- Discuss, differentiate and experiment with the relationship between sensory, interactive, and immersive environments.
- Analyze and evaluate various elements of interactive media installation such as performance, space, object, interface, and interaction, as well as how they relate to one another when organized in a single artwork.
- Describe and analyze contemporary interactive artworks using vocabulary related to interactive and immersive installation design.
- Learn and apply the basics of Arduino programming and electronics.

- Develop interactive media projects using Arduino and TouchDesigner
  - Integrate sensors, actuators, and real-time data processing in interactive installations.
  - Explore and implement real-time graphics and interactive media techniques in our existing practices.
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### Required Materials:

- Arduino Starter Kit (including an Arduino board, breadboard, jumper wires, resistors, LEDs, sensors, etc.), *This is provided to you by the instructor.*
  - Arduino Expanded Sensor & Actuator Kit. *This is provided to you by the instructor.*
  - Arduino IDE Software (free via <https://www.arduino.cc/en/software>)
  - TouchDesigner Software (available for free at Derivative's website via <https://derivative.ca/download>)
  - Please note that students are responsible for any additional materials for their independent research.
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### Attendance Policy

After two unexcused absences, you will lose 5% of your final grade per absence. Being over 15 minutes late will be counted as an unexcused absence.

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### Overview of Projects & Grading Breakdown (% = points for a total of 100pts):

\*\*Please note that all materials must be submitted on-time and to eLearning by their deadlines. Not doing so will lead to a deduction in the points for the respective assignment\*\*

*“Arduino Assignments” (total of 6%) are short (1 hr), guided projects designed specifically for students to work through technical processes using Arduinos. They are directly connected to the ideas and concepts of in-class workshops.*

Assignment 1 - Arduino LED Circuit	2%
Assignment 2 - Arduino Sensors & Circuits	2%
Assignment 3 - Arduino Sensor & Actuator Circuit	2%

*“Arduino Animate Object Project” (total of 20%) is a long-form (4 week) project where students develop and produce an arduino-based artwork that utilizes concepts and processes from our Arduino workshops in an iterative manner.*

Arduino Animate Object Part 1: <i>Ideation &amp; Research</i>	5%
Arduino Animate Object Part 2: <i>Prototyping</i>	5%
Arduino Animate Object Part 3: <i>Implementation</i>	5%
Arduino Animate Object: <i>Presentation &amp; Documentation</i>	5%

*“TD Assignments” (total of 12%) are short (~1 hr each), guided projects designed specifically for students to work through technical processes. They are directly connected to the ideas and concepts of in-class workshops.*

TD Assignment 1 - Understanding TOPS	2%
TD Assignment 2 - Understanding CHOPS	2%
TD Assignment 3 - Understanding DATS	2%
TD Assignment 4 - Understanding SOPS	2%
TD Assignment 5 - Understanding COMPS	2%
TD Assignment 6 - Bridging Arduino with TD	2%

*“Independent Research” (total of 30%) is a long-form (7 week) project where students develop and produce an original interactive artwork that utilizes concepts and processes from our Touch Designer workshops in an iterative manner.*

Independent Research Part 1 - <i>Ideation &amp; Research</i>	5%
Independent Research Part 2 - <i>Prototyping</i>	5%
Independent Research Part 3 - <i>Revision &amp; Troubleshooting</i>	5%
Independent Research Part 4 - <i>Implementation</i>	5%
Independent Research Part 5 - <i>Presentation &amp; Documentation</i>	8%
Peer Feedback (2x)	2%

*“Journals” (total of 18%) are short (100-200 word) documents in response to guided prompts that are assigned throughout the semester. These are designed to help you think through ideas and processes for your larger creative works prior to those larger works being assigned.*

Journal 1 - <i>Themes &amp; Concepts</i>	2%
Journal 2 - <i>Aesthetics of Electronic Art</i>	2%
Journal 3 - <i>Sensory Design</i>	2%
Journal 4 - <i>The “Animate” Object</i>	2%
Journal 5 - <i>Sketching Your System</i>	2%
Journal 6 - <i>Imagining Liveness</i>	2%
Journal 7 - <i>Thinking beyond the Audio/Visual</i>	2%
Journal 8 - <i>Reflecting on Process (Animate Object)</i>	2%
Journal 9 - <i>Concepts for Independent Research</i>	2%

*Attendance and Participation (total of 14%) is tracked over the course of the semester. This is marked for each of our sessions. Being in attendance is counted by the student being present in-person, engaged in discussion and/or workshops, and being prepared for the duration of the class period with the appropriate materials. Please remember to bring all necessary materials each week to avoid losing points. Please see the attendance policy for additional details.*

Attendance & Participation

14%

## Course Schedule

**PLEASE NOTE:** The exact content and sequence listed below may be subject to change due to University-wide closures cancellations and the changing availability of guest lecturers and critiques. The assignment breakdown in respect to % of overall grades will remain the same.

Wk	Topic		Assignments
1 (01/23)	<b>Course Introduction</b>	<p><b>Presentation:</b></p> <ul style="list-style-type: none"> <li>• Course expectations &amp; schedule</li> <li>• “What do we mean when we say “Interactive Media Installation”</li> </ul> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>• Downloading &amp; Installing the <a href="#">Arduino IDE</a></li> <li>• Downloading &amp; Installing the Non-commercial version of <a href="#">Touch Designer</a></li> </ul>	<p><b>Due for Week 2</b></p> <p>Read: (1) Introduction to <i>Physical Computing</i> by O’Sullivan &amp; Igoe, and (2) “A History of Electronic Art in the Twentieth Century” from <i>ART + DIY ELECTRONICS</i> by Garnet Hertz</p> <p>Watch: (1) <a href="#">Yuri Suzuki: The Art of Sound</a> via Crane.tv, (2) <a href="#">Looks like Music by Yuri Suzuki</a> via Dezeen</p> <p>Write: Journal 1 (Themes &amp; Concepts)</p>
2 (01/30)	<b>Interactive Art &amp; Arduino Workshop 1</b>	<p><b>Presentation &amp; Discussion:</b> The aesthetics and performance of interactive electronic artwork.</p> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Circuit Design (concepts &amp; components)</li> <li>• Arduino Basics (Setup, IDE, Code and Structure)</li> <li>• Build and code our first circuit</li> </ul>	<p><b>Due for Week 3</b></p> <p>Read: “Discovering New Terrains of Speculation and Innovation” from <i>A Touch of Code: Interactive Installation and Experiences</i> (Gestalten, 2011)</p> <p>Watch: <a href="#">Simone Giertz, Queen of Sh**y Robots</a> via XOXO Festival (2016)</p> <p>Complete: Arduino Assignment 1 - LED Circuit</p>

			Write: Journal 2 - Aesthetics of Electronic Art
3 (02/06)	<b>Speculation &amp; Innovation &amp; Arduino Workshop 2</b>	<p><b>Presentation:</b> Design process as “Speculation &amp; Innovation.”</p> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>● Review Assignment 1</li> <li>● Reading Analog &amp; Digital Inputs</li> <li>● Mapping data ranges via map() function</li> <li>● Understanding Variable Resistors (analog) &amp; Ultrasonic Sensors (digital)</li> </ul>	<p><b>Due for Week 4</b></p> <p>Read: “Designing LIVE: A New Medium for the Senses” and “Notes on Touch, Sound, Smell, and Flavor” in <i>The Senses: Design Beyond Vision</i> by Lupton and Lipps</p> <p>Watch: <a href="#">U-ram Choe - Kinetic Sculptor puts Cyber Dreams in Motion</a> via Creators Project</p> <p>Complete: Arduino Assignment 2 - Sensor Circuit &amp; Experiment (Input)</p> <p>Write: Journal #3 (“Sensory Design”)</p>
4 (02/13)	<b>Sensory Design &amp; Arduino Workshop 3</b>	<p><b>Presentation &amp; Discussion:</b> Sensory Art &amp; Design</p> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>● Ultrasonic Sensors</li> <li>● Understanding types and uses of “actuators”</li> <li>● Ohm’s Law</li> <li>● Transistors &amp; Relays</li> <li>● Circuit Design &amp; Code for DC Motor</li> </ul>	<p><b>Due for Week 5</b></p> <p>Read: “Sensory Materials” from <i>The Senses: Design Beyond Vision</i> by Lupton and Lipps</p> <p>Watch: <a href="#">Additivism: An Encounter with the Fluid Outside</a> artist talk with Moreshin Allahyari and Daniel Rourke via Sonic Acts</p> <p>Complete: Arduino Assignment 3 - Sensor &amp; Actuator Circuit (Input + Output)</p> <p>Write: Journal #4 (The “Animate Object”)</p>
5 (02/20)	<b>Project Dev. &amp; Arduino Workshop 4</b>	<p><b>Presentation &amp; Brainstorm:</b> Key points when planning an interactive electronic artwork.</p> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>● Circuit Design &amp; Motor Control (Cont.)</li> <li>● Coding Acceleration &amp; Deceleration</li> </ul>	<p><b>Due for Week 6</b></p> <p>Watch: <a href="#">PULSE – and Interview &amp; Performance with Debora Bernagozzi &amp; Jason Bernagozzi</a></p> <p>Complete: Arduino Animate Object Project (Part 1)</p> <p>Write: Journal #5</p>
6 (02/27)	<b>Tool-building &amp; TD Workshop 1</b>	<p><b>Presentation &amp; Demo:</b> Tool-building as &amp; for art.</p> <p><b>Workshop:</b></p> <ul style="list-style-type: none"> <li>● Animate Object Project (review part 1, introduce part 2))</li> </ul>	<p><b>Due for Week 7</b></p> <p>Watch: (1) <a href="#">The Immense Electronic Art of Ryoji Ikeda</a> via ABC News Australia, (2)</p>

		<ul style="list-style-type: none"> <li>Introduction to Touchdesigner (Overview of environment, components, possibility)</li> </ul>	<p><a href="#">Panary Optics: NONOTAK</a>, via 180 FACT, <b>(3)</b> <a href="#">LUX: Carsten Nicolai - unicolor</a></p> <p>Complete: Arduino Animate Object Project (Part 2)</p> <p>Write: Journal #6</p>
7 (03/06)	<b>Animate Object &amp; TD Workshop 2</b>	<p><b>Workshop 1:</b></p> <ul style="list-style-type: none"> <li>Share progress &amp; troubleshoot Animate Object projects.</li> <li>Introduce Animate Object Projects (part 3)</li> </ul> <p><b>Workshop 2:</b></p> <ul style="list-style-type: none"> <li>Integrating TouchDesigner &amp; Arduino</li> </ul>	<p><b>Due for Week 8</b></p> <p>Complete: Arduino Animate Object Project (Part 3)</p> <p>Complete: TD Assignment 1 - Understanding TOPS</p> <p>Write: Journal #7</p>
8 (03/13)	<b>Themes in Live A/V Art &amp; TD Workshop 3</b>	<p><b>Presentation:</b> Audio, Visual, Spatial - Key themes in live AV Art.</p> <p><b>Workshop:</b> Understanding CHOPS (working with signals)</p> <p>Workshop 2: Animate Object Project</p>	<p><b>Due for Week 10</b></p> <p>Watch: <a href="#">Refik Anadol - How This Guy Uses A.I. to Create Art</a> via WIRED</p> <p>Complete: <b>(1)</b> TD Assignment 2 - Understanding CHOPS <b>(2)</b> Animate Object (Part 4): Presentation &amp; Documentation</p> <p>Write: Journal #8</p>
9 (03/20)		<b>SPRING BREAK - No Class this week</b>	Please use this time to complete your Animate object project.
10 (03/27)	<b>Data Art &amp; TD Workshop 4</b>	<b>Due: Arduino Animate Object (Part 4): Presentation &amp; Documentation</b>	<p><b>Due for Week 11</b></p> <p>Complete: <b>(1)</b> TD Assignment 3 - Understanding DATs <b>(2)</b> Independent Research (Part 1 - Ideation &amp; Research)</p> <p>Write: Journal #9</p>
11 (04/03)	<b>3D Motion Art &amp; TD Workshop 5</b>	<p><b>Presentation:</b> Experimental 3D practices</p> <p><b>Workshop:</b> Understanding SOPS (rendering 3D)</p>	<p><b>Due for Week 12</b></p> <p>Read: "Classification and Analysis of Interactive Installation" from <i>Interactive Installation Art &amp; Design: Art Experience Driven by Technology</i> by ARTPOWER</p> <p>Watch: <a href="#">Interactive Light Artist Jen Lewin</a> via Wired</p> <p>Complete: <b>(1)</b> TD Assignment 4 - Understanding SOPs</p>

<b>12</b> (04/10)	<b>Project Workshop</b>	<b>Presentation:</b> Touch Designer In-Practice  <b>Workshop:</b> Understanding COMPS (components that hold networks within themselves + Bridging Arduino with Touch Designer)	<b>Due for Week 13</b>  Complete: <b>(1)</b> TD Assignment 5 - Understanding SOPs, <b>(2)</b> Independent Research (Part 2 - Prototyping)
<b>13</b> (04/17)	<b>Project Workshop</b>	<b>Presentation:</b> Case Studies in Touch Designer + Arduino (Audio Reactivity, Point Cloud Manipulation, and Computer Vision)  <b>Workshop:</b> Bridging Arduino with Touch Designer 2	<b>Due for Week 14</b>  Complete: <b>(1)</b> TD Assignment 6 - Bridging Arduino with TD <b>(2)</b> Independent Research Project (Part 3 - Revision & Troubleshooting)
<b>14</b> (04/24)	<b>Project Workshop</b>	<b>Discussion &amp; Workshop: Project Development</b>	<b>Due for Week 15</b>  Complete: Independent Research Project (Part 4) - Implementation
<b>15</b> (05/01)	<b>Project Workshop</b>	<b>Discussion &amp; Workshop: Project Development</b>	<b>Due for Week 16</b>  Complete: Independent Research (Part 5) Presentation & Documentation
<b>16</b> (05/08)	<b>Final Projects</b>	<b>Presentation &amp; Discussion: All final works will be presented in their physical or documented form on 05/08</b>  <b>Final Packets of documentation materials and peer feedback are due on 05/14.</b>	<b>Due by 05/14</b>  Complete: Project Documentation Packet & Materials  Write: 2x Peer feedback

## Human Creativity and Machine Assistance (i.e. AI Collaboration)

While AI can be a valuable tool, it is crucial that most of the work you submit is rooted in your creative vision and artistic practice. In this course, you may explore AI tools as part of your process. However, it is essential to maintain transparency about the extent to which AI has contributed. For any aspect of submitted work where AI tools are used, you must clearly specify in writing:

1. *Percentage of AI Use:* Indicate the estimate percentage of how much of your submitted work was influenced or directly created by AI tools (e.g., "20% of this work was generated by AI-based text-to-image generation tool DALL-E and Photoshop's Content-Aware Fill feature that was used to generate backgrounds and special effects" or "10% of my writing involved ChatGPT for grammar correction in the final draft")

2. *Role of AI:* Describe how and why AI was utilized. Was it necessary to apply AI tools for executing your work? Was it used for brainstorming ideas, producing visual elements, editing or augmenting your concept?

3. *Reflection on AI's Impact:* Write a brief note on how AI tools influenced your creative decisions, whether it helped or hindered your artistic vision, and how you managed to balance your own ideas and skills with its inputs.

\* **NOTE:** Failure to specify the above and provide a brief description with your submission will result in an "Incomplete" grade and/or a score of "0-points" for the assignment.

## **CLASS MATERIALS**

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

## **CLASS ATTENDANCE**

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes. *Please see the attendance policies for this course above.*

## **CLASS PARTICIPATION**

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

## **CLASS RECORDINGS**

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the AccessAbility Resource Center has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

## **CLASSROOM CITIZENSHIP**

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy.

## **COMET CREED**

*This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:*

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

## **ACADEMIC SUPPORT RESOURCES**

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

## **UT DALLAS SYLLABUS POLICIES AND PROCEDURES**

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.