

# Certificate in Digital Arts

## Overview

The curricular goal of the Digital Arts certificate program is to give students skills to make works of art that are informed by digital technology, scholarship and disciplinary tradition.

1. What is Digital Arts: digital technologies keep transforming how people create, perform, and experience art.
2. The Public Digital Arts Cluster: at the core of the cluster is a commitment to innovation and interdisciplinary collaboration in research, teaching, creative work and the public expression of the University's creative research and scholarship. Faculty have home departments in Art and Art History, Cinema, Computer Science, Dance/Theatre, Engineering, and Music.
3. The Certificate in Digital Arts at the University of Iowa will give the students the knowledge and skills "to apply new technologies and integrate multiple media and disciplines into new forms of expression." (-Cal Arts, Integrated Media Program). Upon completion of the certificate, students will be able to develop and realize artistic visions using digital technology, and work collaboratively with other artists, engineers, or computer scientists.

Competencies:

- The ability to think about and develop works of art that use digital technology in creative ways.
- The ability to participate in critical discourse about such artistic works.
- The ability to collaborate across disciplines on artistic projects at the intersection of the physical and digital worlds.
- The ability to use art and digital technology to identify, attract and interact with "audiences" in a meaningful and creative way.
- Most courses will include a public dimension, where projects are shown to a public audience.

## Policies

- The undergraduate Certificate in Digital Arts requires a minimum of 24 s.h. of credit, including at least 18 s.h. earned at the University of Iowa. Students must maintain a g.p.a. of at least 2.00 in work for the certificate. Courses taken pass/nonpass do not count toward the certificate. The certificate may be earned by any student admitted to the University of Iowa who is not concurrently enrolled in a UI graduate or professional degree program.
- Students who already have earned a baccalaureate degree from The University of Iowa may return to complete or earn the certificate if they are not enrolled in a graduate or professional program.
- Holders of baccalaureate degrees from other institutions who are not enrolled in a graduate or professional program may enroll at the University of Iowa to complete the certificate.
- Students must declare their intention to pursue the certificate at the Academic Advising Center, C210 Pomerantz Center (319-353-5700), the Office of Academic Programs & Student

Development in 120 Schaeffer Hall (319-335-2633), or on MyUI>Student Information> Programs of Study & Advisors.

- A minimum grade-point average of 2.00 must be maintained on all certificate course work.
- No more than six semester hours may be double counted toward the certificate and a student's major or minor.
- No more than six hours of transfer coursework from another institution may be counted toward the certificate. A minimum of 18 semester hours of certificate course work must be completed at The University of Iowa or in approved study abroad programs.
- Certificate courses may not be taken pass/non-pass.
- A minimum of 18 semester hours of certificate course work (other than language courses) must be completed at The University of Iowa or in approved study abroad programs.
- A course may not be used to satisfy more than one certificate requirement.

## Requirements

Students complete two core courses (6 s.h.), five track (elective) courses (15 s.h.), and one capstone project (3 s.h.) course.

At least one of the electives must be taken from the Computer Science Department, unless the student has already taken a college-level introductory class in Computer Science.

The capstone project course may be taken only after both core courses have been completed.

## Required core course: ARTS:2800 Digital Arts: an Introduction (3 s.h.)

The course is taught in the spring of 2017 & 2018. It will be taught in the fall starting in 2018.

### *General Catalog*

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Introduction to the potential of integrating art with technology, providing a foundation of skills and concepts through hands-on experimentation; lectures and demonstrations will introduce key concepts and ideas as well as the history of digital arts; in labs, students will develop skills that will form a foundation for future investigation; work may include using an Arduino, programming, and developing an interface to control a software project; the final project will be shared with the public in some way; critical discourse, in the form of writing assignments, will allow for reflection and evaluation.

### *Spring 2017 Description*

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During this course, you will develop skills to analyze a piece of audio-visual interactive art, and to put it in perspective within the history of interactive and digital art. You will learn to manipulate audio and video in a digital world. By coding and using the tools some artists use, you will both acquire programming skills and better understand the creative process in projects involving art and technology. You will also develop valuable team work skills.

Upon completion of this course, you will be able to write code in the Max multimedia graphical programming environment, aimed at manipulating live audio and video. You will also be able to write

programs for a microcontroller in the Arduino text-based language. You will be able to use basic electronic components, including sensors to get some information about the physical world. Instead of taking a final exam, you will work on a final project; each final project team will gather students with a scientific background and students from the humanities.

## **Required second level core course: Performance, Art & New Technologies in Society (3 s.h.)**

### ***Course Description***

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This course surveys some of the major technological innovations that have deeply impacted society and thus live performance and art in the late 20th and early 21st century and looks toward the future of our rapidly evolving technological world. Students will examine theoretical texts, performances, and artistic works that address the impact of technology on the human condition as well as create original user-based experiences combining art and technology. Throughout the course, we will explore the social, ethical, and cultural implications of technology dependent artistic practice as well as some of the practical and technical challenges of creating this kind of work through hands on projects with emerging software and hardware. A variety of technologies will be explored and adapted for artistic projects as they relate to the following five categories of original human experience:

1. Telepresence/Liveness (video/web cams, Max/Isadora/Processing)
2. Intelligent Architecture/Smart Spaces/Internet of Things (sensors)
3. Artificial Intelligence/Transhumanism (robotics, etc)
4. Augmented and Virtual Reality (360 cameras, cardboard, Vive)
5. Social media platforms, apps, websites

This will be a 3000 level course.

This course would be offered for the first time in Spring 2019.

Prerequisites: T.B.A. (there will be 2-3 courses that can serve as prerequisites, or permission of instructor. Those courses will include the first core course ARTS:2800.)

## **Track Courses (15 s.h.)**

- Students will complete 5 courses approved in a single track.
- No more than two courses may be taken in the same department.
- At least one of the electives must be taken from the Computer Science Department, unless the student has already taken a college-level introductory class in Computer Science.
- Students who wish to count a course not listed in the track may submit a request for approval of the course to the certificate director.
- Students must meet with the certificate director or advisor every semester to confirm course selections and plan for the capstone project.

## *New Modes of Storytelling*

Digital and emerging technologies are changing the ways we tell and experience stories. How can we as storytellers, artists, and engineers use digital media and new technologies to engage 21<sup>st</sup> century audiences? Students explore the ideas and technologies that are shaping new modes of storytelling through a variety of transdisciplinary methods across multiple platforms, such as live performances, online experiences, mobile technologies, digital video, immersive installations, augmented and virtual reality, etc.

### New Modes of Storytelling Track courses:

<i>Fundamental</i>		
<a href="#">ANIM:2125</a>	Introduction to Animation <b>restricted to majors</b>	3
<a href="#">ANIM:3125</a>	Animation I <b>prerequisites &amp; restricted to Art &amp; Art History undergraduate majors/minors</b>	4
<a href="#">ARTS:2000</a>	Big Ideas: Creativity for a Lifetime	3
<a href="#">CINE:1100</a>	The Art of Smartphone Filmmaking	3
<a href="#">CINE:1834</a>	Modes of Film and Video Production	4
<a href="#">CINE:4843</a>	Film/Video Production: Image Design <b>prerequisites</b>	4
<a href="#">CINE:4845</a>	Film/Video Production: Editing <b>prerequisites</b>	4
<a href="#">CINE:4890</a>	Media Production Workshop <b>prerequisites</b>	4
<a href="#">CS:1110</a>	Introduction to Computer Science	3
<a href="#">CS:2110</a>	Programming for Informatics	4
<a href="#">CS:2520</a>	Human Computer Interaction <b>prerequisites</b>	3
<a href="#">THTR:3230</a>	Scene Design I	3
<a href="#">CNW:2770</a>	The Art and Craft of Writing for New Media	3
<a href="#">CW:3218</a>	Creative Writing for New Media	3
<i>Specialized</i>		
<a href="#">CINE:2866</a>	Film/Video Production: Non-Fiction <b>prerequisites</b>	3
<a href="#">CINE:2868</a>	Film/Video Production: Fiction <b>prerequisites</b>	3
<a href="#">CINE:4841</a>	Film/Video Production: Sound Design <b>prerequisites</b>	4
CS: (T.B.A. for Spring 2018)	Introduction to Virtual Reality (Joe Kearney)	
<a href="#">DANC/INTM:3050</a>	Body/Image: Dance Discourse and Practice	3
<a href="#">INTM:2710</a> / CINE 2869 (see also CINE 2864)	Introduction to Intermedia <b>prerequisites</b>	3
<a href="#">MUS:3285</a>	New Musical Instruments: from Design to Performance	3
<a href="#">MUS:4250</a>	Composition: Electronic Media I	3
<a href="#">MUS:4251</a>	Composition: Electronic Media II	3
<a href="#">SCLP:2810</a>	Undergraduate Sculpture I <b>prerequisites &amp; restricted to Art &amp; Art History undergraduate majors/minors</b>	3
<a href="#">SCLP:3840</a>	Robotic Art Studio <b>prerequisites</b>	4
<a href="#">SCLP:4835</a>	Electronic Objects and Spaces <b>prerequisites</b>	4

<a href="#">SCLP:4840</a>	Air, Actuators and Motors	4
<a href="#">THTR:4230</a>	Scene Design II	3
<a href="#">THTR:3250</a>	Lighting Design I	3
<a href="#">THTR:4250</a>	Lighting Design II	3
<a href="#">THTR/DANC:3880</a>	Installations and Interactive Performance	3
<a href="#">THTR/DANC:3890</a>	Producing and Directing Digital Video	3
<a href="#">COMM:1840</a>	Television Studio Production	3
<a href="#">CW:3215</a>	Creative Writing and Popular Culture	3

## *Sound Design*

Sound is a critical component to the audience experience of traditional and new media. In addition to the two core PDA classes and the capstone project, students focus on sound design by selecting additional courses in electronic music production and composing, audio engineering, acoustics, etc. The Sound Design track provides an opportunity for students to focus their training in (or specialize in) the theory and practical skills needed to create and produce sound design for:

- Live public performances in theatre, dance, and/or music that use digital and new technologies.
- Interactive sound art.
- Public art exhibitions, installations, or gallery settings.
- Music and sound recordings for analog and digital release.
- Internet, mobile technology, and new media applications.
- Augmented and virtual reality.
- Games.

### Sound Design Track courses:

<i>Fundamental</i>		
CINE:1636	Intro to Film Sound (Theory)	
<a href="#">CINE:4841</a>	Film/Video Production: Sound Design <b>prerequisites</b>	4
<a href="#">MUS:3285</a>	New Musical Instruments: from Design to Performance	3
<a href="#">MUS:3780</a>	Audio Recording I	3
<a href="#">MUS:3781</a>	Audio Recording II <b>prerequisites</b>	3
<a href="#">MUS:4250</a>	Composition: Electronic Media I	3
<a href="#">MUS:4251</a>	Composition: Electronic Media II	3
<a href="#">THTR:3260</a>	Sound Design for the Theatre	3
<i>Specialized</i>		
<a href="#">CS:1110</a>	Introduction to Computer Science	3
<a href="#">CS:3980:0200</a>	Topics in Computer Science I (Interactive Multimedia Programming) <b>prerequisites</b>	3
CS: (T.B.A. Spr. 2018)	Introduction to Virtual Reality (Joe Kearney)	
<a href="#">MUS:3280</a>	Spectral Nature of Sound: Acoustics, Analysis, and Resynthesis	3
<a href="#">MUS:3285</a>	New Musical Instruments: from Design to Performance	3

<a href="#">MUS:3190:0002</a>	LOUi Laptop Orchestra	0/1
<a href="#">SCLP:3840</a>	Robotic Art Studio <b>prerequisites</b>	4
<a href="#">SCLP:4835</a>	Electronic Objects and Spaces <b>prerequisites</b>	4
<a href="#">THTR/DANC:3890</a>	Producing and Directing Digital Video	3
<a href="#">JMC:2020</a>	Introduction to Multimedia Storytelling <b>restricted to majors</b>	4
<a href="#">JMC:3645</a>	Digital Storytelling <b>restricted to majors + prerequisites</b>	4

### *Visual Design*

Visual modes of communication consume our daily experience, from informational road signs to internet interfaces to the omnipresence of digital screens. Visual design is a crucial aspect to telling stories and communicating in both traditional and new media. In addition to the two core PDA classes and the capstone project, students focus on visual design by selecting additional courses in digital video, theatrical design, graphic design, 3D design, animation, etc. The Visual Design track provides an opportunity for students to focus their training in (or specialize in) the theory and practical skills needed to create and produce visual design for:

- Live public performances in theatre, dance, and/or music that use digital and new technologies.
- Interactive visual art.
- Public art exhibitions, installations, or gallery settings.
- Film and video productions for analog and digital release.
- Internet, mobile technology, and new media applications, including 360 video.
- Augmented and virtual reality.
- Games.

### Visual Design Track courses:

<i>Fundamental</i>		
<a href="#">ANIM:2125</a>	Introduction to Animation <b>restricted to majors</b>	3
<a href="#">ANIM:3125</a>	Animation I <b>prerequisites &amp; restricted to Art &amp; Art History undergraduate majors/minors</b>	4
<a href="#">CINE:1834</a>	Modes of Film and Video Production	4
<a href="#">CS:1110</a>	Introduction to Computer Science	3
<a href="#">CS:2110</a>	Programming for Informatics	4
<a href="#">CS:2520</a>	Human Computer Interaction <b>prerequisites</b>	3
<a href="#">THTR:3202</a>	Graphic Design and Identity	3
<a href="#">THTR:3230</a>	Scene Design I	3
<a href="#">THTR:4230</a>	Scene Design II	3
<a href="#">THTR:3250</a>	Lighting Design I	3
<a href="#">THTR:4250</a>	Lighting Design II	3
<a href="#">THTR:3270</a>	Entertainment Design	3
<a href="#">THTR/DANC:3890</a>	Producing and Directing Digital Video	3
<i>Specialized</i>		

<a href="#">CERM:3010</a>	Advanced Clay Forming III <b>restricted to majors &amp; prerequisites</b>	4
<a href="#">CINE:2868</a>	Film/Video Production: Fiction <b>prerequisites</b>	3
<a href="#">CINE:3195</a>	Undergraduate Seminar Video Games & Cinema <b>restricted to cinema major, and junior or senior standing</b>	3
<a href="#">CINE:4821</a>	Film/Video Production: Selected Topics <b>prerequisites</b>	3
<a href="#">CINE:4843</a>	Film/Video Production: Image Design <b>prerequisites</b>	4
<a href="#">CINE:4845</a>	Film/Video Production: Editing <b>prerequisites</b>	4
<a href="#">CINE:4890</a>	Media Production Workshop <b>prerequisites</b>	4
CS: (T.B.A. for Spring 2018)	Introduction to Virtual Reality (Joe Kearney)	
<a href="#">SCLP:3840</a>	Robotic Art Studio <b>prerequisites</b>	4
<a href="#">SCLP:4835</a>	Electronic Objects and Spaces <b>prerequisites</b>	4
<a href="#">SCLP:4840</a>	Air, Actuators and Motors	4
<a href="#">TDSN:2210</a>	Problems in 3-D Design <b>restricted to Art &amp; Art History undergraduate majors/minors + prerequisites</b>	3
<a href="#">TDSN:2240</a>	Digital Drafting with AutoCAD <b>restricted to Art/Art History UG majors or Engr UG majors + prerequisites</b>	3
<a href="#">TDSN:2250</a>	Computer Modeling with 3ds Max <b>restricted to Art/Art History UG majors or Engr UG majors + prerequisites</b>	3
<a href="#">GEOG:1050</a>	Foundations of GIS	3

### *Interactive Design & Intelligent Spaces*

From Human Computer Interaction to experiential museum experiences, we are constantly interacting and interfacing with both the physical and digital worlds. How does embedded computation change the way we experience our surroundings? Do immersive environments change the way we experience art and performance?

In the Interactive Design & Intelligent Spaces track, students explore how the human body interacts with and can control computers, digital technologies, visual and aural media, etc. in order to create unique, engaging, and embodied user experiences. They explore the value of and practical skills needed to create dynamic spaces within the built environment that react to their physical surroundings and the inhabitants within.

#### Interactive Design & Intelligent Spaces Track Courses:

<i>Fundamental</i>		
<a href="#">CS:1110</a>	Introduction to Computer Science	3
<a href="#">CS:2110</a>	Programming for Informatics	4
<a href="#">CS:2520</a>	Human Computer Interaction <b>prerequisites</b>	3
CS: (T.B.A. Spr. 2018)	Introduction to Virtual Reality (Joe Kearney)	
<a href="#">THTR/DANC:3880</a>	Installations and Interactive Performance	3
<a href="#">INTM:2710</a> / CINE 2869	Introduction to Intermedia <b>prerequisites</b>	3

<i>Specialized</i>		
<a href="#">CERM:3010</a>	Advanced Clay Forming III <b>restricted to majors &amp; prerequisites</b>	4
CS:3980	Topics in Computer Science I (Hybrid Mobile Application Development) <b>prerequisites</b>	3
ECE:2120 / TDSN:2205	Art & Engineering ( <b>last offered 2014</b> )	
<a href="#">IE:5995:0001</a>	Contemp. Topics in Industrial Engineering (Creative Engineering Design)	3
<a href="#">IE/ME:4650</a>	Mechatronics Engineering for Smart Device Design <b>prerequisites</b>	3
<a href="#">SCLP:2810</a>	Undergraduate Sculpture I <b>prerequisites &amp; restricted to Art &amp; Art History undergraduate majors/minors</b>	3
<a href="#">SCLP:3840</a>	Robotic Art Studio <b>prerequisites</b>	4
<a href="#">SCLP:4835</a>	Electronic Objects and Spaces <b>prerequisites prerequisites</b>	4
<a href="#">TDSN:2210</a>	Problems in 3-D Design <b>restricted to Art &amp; Art History undergraduate majors/minors + prerequisites</b>	3
<a href="#">TDSN:2240</a>	Digital Drafting with AutoCAD <b>restricted to Art/Art History UG majors or Engr UG majors + prerequisites</b>	3
<a href="#">TDSN:2250</a>	Computer Modeling with 3ds Max <b>restricted to Art/Art History UG majors or Engr UG majors + prerequisites</b>	3
<a href="#">THTR:3250</a>	Lighting Design I	3
<a href="#">THTR:4250</a>	Lighting Design II	3
<a href="#">THTR:3260</a>	Sound Design for the Theatre	3
<a href="#">THTR:3270</a>	Entertainment Design	3
<a href="#">THTR:3230</a>	Scene Design I	3
<a href="#">THTR:4230</a>	Scene Design II	3
<a href="#">SCLP:4840</a>	Air, Actuators and Motors	4
<a href="#">MUS:3285</a>	New Musical Instruments: from Design to Performance	3
<a href="#">MUS:4250</a>	Composition: Electronic Media I	3
<a href="#">MUS:4251</a>	Composition: Electronic Media II	3

### *Choose Your Own Adventure*

Geared toward the creative entrepreneur, the trail-blazers who do not fit into pre-defined categories and want to forge their own paths, this track allows students to work with a PDA advisor to create a specialized plan of study.

### **Capstone project (3 s.h.)**

The capstone project must result in a work that is both artistic and digital, and it must be shared in a meaningful way with the public. It must be informally approved by the certificate director at least one semester before the work takes place. The student will then select at least one faculty member from an appropriate department as a formal advisor. The student then submits a written proposal to the certificate



director and the advisor. The proposal must include a description of the work; a statement of why the student is prepared to accomplish the work; and a list of equipment, materials, space or funding required. Once the proposal is approved by the director and advisor, the student enrolls in an independent study with the advisor as instructor. The student meets with the advisor on a regular basis and engages other faculty and students as needed. Once the project is complete and shared publicly, the advisor evaluates it and submits a grade.

## Additional Information

- The certificate advisory committee will include: Alan MacVey, David Gier, Bryon Winn, Alberto Segre, Jean-Francois Charles, Kyle Rector, and Daniel Fine.
- The director of the program will be **To be determined. It will be a member of the steering committee or a member of the cluster faculty.**
- The estimated number of students enrolled in the certificate program is:

2018-19	5
2019-20	15
2020-21	25
2021-22	30
2022-23	35

- The first year in which a student is likely to receive a certificate is 2019-20. More will follow.