

USC Iovine and Young Academy

*Arts, Technology and the Business
of Innovation*

**IDSN 599: Special Topics: Applied Creative
Technology: Innovating Communication**
Units: 2
Spring 2022—Tuesdays—5:30pm-7:20pm PT

Location: Online

Instructor: Robert Checchi
Office: Online
Office Hours: By appointment
Contact Info: checchi@usc.edu

Grader and/or Classroom Assistant/s:
Office Hours (if applicable):
Contact Info: Email, phone number (office, cell), etc.

IT Help: Digital Campus Online Technical Support
Contact Info: 1-833-740-1273,
TechSupport@digitalcampus.2U.com

Course Description

The use of creative technology in art, entertainment, education and healthcare is steadily increasing as advancements in new media pave the way for innovative ways to engage the public. The breadth of creative technology applications is so varied and global that it is difficult to keep track of the latest advancements, applications and major players in the field. This course will present the different ways creative technology is being applied today through concrete project examples from across the spectrum of new media. The course will also give students an opportunity to learn first-hand how creative technology functions through hands-on assignments that utilize applications available online.

Through async videos and readings as well as faculty-led Zoom lectures students will become familiar with the latest advances in technologies and industries through specific actual completed projects and applications. Assignments will mix practical research for fictionalized project scenarios and hands-on creation of A.I. text generation, A.I. chatbots, and AR prototypes using the latest machine learning tools. This course will not only teach students where and how to search for the latest technology projects but will prompt them to learn how to think critically about the application in order to analyze the success or failure of each project. Each week students will be presented with a series of technologies related to a single topic. Each technology will be illustrated and explained through an actual experience, project, tool, or company. Students will be challenged to apply the knowledge they have learned through analysis and hands-on activities by designing “concept only” experiences that combine multiple technologies in new and innovative ways. In addition, each module will include a unit devoted to diversity, equity and inclusion highlighting the challenges facing creative technologists in creating products, programs and applications that promote a just and equitable society.

This course will cover creative technology as applied to virtual reality storytelling, A.I. generated voice recognition and language processing, interactive sound, body-centric AR, and the future of wearables.

Learning Objectives and Outcomes

- Expose technologists, designers and entrepreneurs to real world applications of creative technology.
- Foster creative technology visionaries who are adept at critical problem solving.
- Equip students with technical, theoretical and historical perspectives to develop new aesthetics, and innovations in creative technology.
- Explore the intersection of technology with other creative technology practices.
- Enable students to think conceptually, critically, and creatively about technology and its impacts upon our world.
- Allow students to actively participate in the writing of a virtual film, creation of an A.I. chatbot, and production of an augmented reality activation in order to foster better understanding of the technology.

Prerequisite(s): There are no prerequisites for this course. This course will be valuable for students working in technology and those with no experience working in technology

Co-Requisite(s): There are no co-requisites for this course.

Concurrent Enrollment: There are no course(s) that must be taken simultaneously

Course Notes

This course will be conducted online, using a combination of synchronous and asynchronous methods. Students are responsible for all additional assigned material, including video lectures, interviews, and reading materials offered by the instructors throughout the course.

Technological Proficiency and Hardware/Software Required

All software applications necessary for the completion of assignments will be browser-based.

Required Readings and Supplementary Materials

Required content and readings may be assigned by faculty and will be drawn from textbooks, articles, papers, cases, and online publications (e.g., articles, op-ed essays) available through a host of available outlets; in all instances, the material will be delivered via computer. Students will also be required to view online videos; complete web-based, interactive exercises; and respond to peer and faculty comments (within an online discussion forum or group discussion).

Description and Assessment of Assignments

Below are brief overviews of each assignment and deliverable across three modules in the course: **3D Storytelling; Language Processing; Interactive Bodies**. Unless specified otherwise, all assignments will be submitted within the 2U Learning Management System (LMS). If you experience technical difficulties submitting assignments, email the course instructors directly and utilize 2U student support for assistance. Additional assignment details will be provided separately.

1.1 – What is Creative Technology?

Research two creative technology projects that you find inspiring. They could be an art installation, a digital experience or a product. What are the project's strengths and weaknesses? How could they be improved?

In the first two slides explain each project and why you chose them. What made it unique or especially interesting to you? Explain how the project utilizes creative technology. On the third slide imagine what you might create by combining the technology of the first slide with the technology of the second slide. How might they build off each other to create something new? Don't be concerned with the feasibility or production. The third slide should be concept only. Upload a pdf of your slide presentation to the LMS.

1.2 – Improve an existing film scene as a 3D VR experience

Choose a scene from one of your favorite movies. How might the scene change if, via VR, the viewer were placed in the middle of the 3D scene rather than outside the scene looking at it on a 2D screen.

Part 1: Consider how you might direct the viewer's gaze at important narrative moments of the scene.

Part 2: Consider how you might problem solve the elimination of scene cuts as a storytelling device.

Create a slide presentation that outlines the scene and then considers the questions above

1.3 – Scene Script for 3D Virtual Reality Film

Write a 3 page script for a scene in a 3D VR Film. How can dialogue, environmental audio and scenery direct the viewer's attention in a 3D space. The script should include scene description, audio description, dialogue and at least one predetermined animated character and one live actor as avatar directed to improvise so that the experience is unique to each performance.

How might the viewer interact with predetermined animated characters as well as live actors performing as avatars? How can sensory experiences outside of sight and sound enhance the storytelling? How can the exploration of a digital 3D space be used to tell a nonlinear choice-driven narrative with a beginning and end?

Use the [StudioBinder](#) template/format to write your script on 8.5" x 11" pages and upload a pdf to the LMS.

2.1 – Create A.I. Text Generated Content

Using the [Sassbook AI Writer](#) to create 3 distinct paragraphs of text. Paragraphs should be broken down into the following genres: Fictional, Informational, and Poetic. Experiment with the Creativity Configuration toggling between Conservative, Balanced and Inventive. How did the text change from one genre to the next and between configurations?

Using the [Sassbook AI Summarizer](#) summarize 2 distinct paragraphs of text. Experiment with the Method Configuration toggling between Abstractive and Extractive. How did the text change from one subject to the next and between configurations?

On the first page of a slide deck copy the 5 paragraphs of text from the exercises. Describe the differences and similarities of the texts and any insights you discovered from the comparison. On the second page describe how might an A.I. text generator be used in your industry or as part of your professional scope of work? What other applications might benefit from a A.I. text generator.

2.2 – Create a Chatbot using Google Dialog Flow

Using [Google Dialog Flow](#) create a conversational chatbot that is able to answer 4 questions on a single topic. Chatbot will need to incorporate a series of Intents and Entities within the Dialog Flow platform. Each question should address a different aspect of the topic. Answers to the questions should follow a distinct chatbot persona determined by you. What conversational tone best fits your topic and might prompt further engagement by the user.

On the first page of a slide deck describe the chatbot topic and the conversational persona. Write out the four questions that the chatbot should be able to answer and a link to the Dialog Flow project page. On the second page describe how might a chatbot be used in your industry or as part of your professional scope of work? What other applications might benefit from a chatbot.

2.3 – Create a Deep Fake

Using RunwayML create a machine learning Deep Fake combining a portrait image and a video of yourself speaking. What type of image worked best? As Deep Fake audio and video become more realistic, where do you think this new technology will produce the most damaging effects on society? Are there ways to use this technology to produce societal benefits?

Create a slide presentation with a video of your Deep Fake on the first page. On the second page explain two ways that you think Deep Fakes will cause harm and two ways that you feel they might be beneficial.

3.1 – Create an AR Body effect using Lens Studio

Download [Lens Studio](#) to your desktop computer or laptop. Follow the tutorial from the Async video to create an AR effect that tracks your face or body. Test the AR filter on Snap on your mobile device. Take a photo or record a video within Snap of the filter in use at your home. What were some of the difficulties you discovered in creating the filter? What were the challenges in using the filter? How did the base graphic you chose to use change the effect?

Create a slide presentation with either the photos or video of the filter. Upload a pdf of your slide presentation to the LMS.

3.2 – Design your own personal robot

Design your own personal robot. Given the opportunity, what would you desire in a personal robot? How might it assist you? What features would it have? What would it look like? How might it function on a daily basis? Would you use it for chores, cooking, companionship, conversation?

Using the S-Curve Analysis strategic foresight framework map your personal robot as either a signal, trend or emerging issue. Where does your idea fall within the S-Curve? What signals can help you future-cast the next version of human centered robotics?

Create a slide presentation with reference photos and a description of your robot. Upload a pdf of your slide presentation to the LMS.

3.3 – Design your own community robot (Group Project)

As a group combine each of your personal robots into a product for the public. How might the features and functionality of your personal robot be integrated into a single entity. Create 3 personas, 2 scenarios and 1 storyboard detailing how a user might incorporate your robot into their daily lives in a manner that serves the community rather than a single individual.

What are the existing public perceptions of robotics? How might those perceptions be revised or embraced through the application of your robot into the community?

Create a slide presentation with reference photos and a description of your community robot. Upload a pdf of your slide presentation to the LMS.

Grading Breakdown

Including the above detailed assignments, how will students be graded overall? Participation should be no more than 15%, unless justified for a higher amount. All must total 100%.

Assignment	Points	% of Grade
Participation	100	10%
1.1 – What is Creative Technology?	100	10%
1.2 – Improve an existing film scene as a 3D VR experience	100	10%

Academy Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by $\frac{1}{3}$ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Fall 2021 addendum:

- Unless students provide an accommodation letter from USC's Office of Student Accessibility Services or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations. Either classroom recordings or live remote access to the class via Zoom will be provided.
- Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can't attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.
- In the event that you find yourself experiencing COVID-19 related symptoms, in keeping with university recommendations, you should Stay home! This is the best way to prevent spreading COVID-19 as supported by scientific evidence; Please do not come to an in-person class if you are feeling ill, particularly if you are experiencing symptoms of COVID-19

Additional Policies

Class notes policy: Notes or recordings made by students based on a university class or lecture may only be made for purposes of individual or group study, or for other non-commercial purposes that reasonably arise from the student's membership in the class or attendance at the university. This restriction also applies to any information distributed, disseminated, or in any way displayed for use in relationship to the class, whether obtained in class, via e-mail or otherwise on the Internet, or via any other medium. Actions in violation of this policy constitute a violation of the Student Conduct Code, and may subject an individual or entity to university discipline and/or legal proceedings. Again, it is a violation of USC's Academic Integrity Policies to share course materials with others without permission from the instructor.

No recording and copyright notice: No student may record any lecture, class discussion or meeting with the instructor without his/her prior express written permission. The word "record" or the act of recording includes, but is not limited to, any and all means by which sound or visual images can be stored, duplicated, or retransmitted whether by an electro-mechanical, analog, digital, wire, electronic or other device or any other means of signal encoding. The instructor reserves all rights, including copyright, to his/her lectures, course syllabi and related materials, including summaries, slides (e.g., Keynote, PowerPoint), prior exams, answer keys, and all supplementary course materials available to the students enrolled in the class whether posted to the LMS or otherwise. They may not be reproduced, distributed, copied, or disseminated in any media or in any form, including but not limited to all course note-sharing websites. Exceptions are made for students who have made prior arrangements with The USC Office of Disability Services and Programs and the instructor.

Participation: Students are expected to actively participate in this course. In an online forum, participation includes:

- Careful reading and viewing of assigned materials by the date due
- Regular, substantive contributions to discussions
- Active engagement with online content
- On-time attendance and full attention in synchronous sessions
- Significant collaboration with classmates and teammates

Course grades may be affected for students who do not contribute to the course through active participation. Students should notify the instructor in advance if they are unable to attend class. Those unable to attend will be required to review the online recording for the session missed, and submit thoughtful feedback to the Instructor.

Contact Hours

This 2-unit course requires 1500 minutes (25 hours) of instructional time per semester, which equals 100 minutes (1.666 hours) of instructional time each week. In addition, it is expected that students will work, on average, an additional 200 minutes (3.333 hours) per week outside of class — on readings/viewings, homework assignments, field experiences, and individual or team projects.

HOW TO PURCHASE SOFTWARE AT THE DISCOUNTED ACADEMY RATE THROUGH THE USC BOOKSTORE:

The following first year software are now available for purchase **online** through the USC Bookstore at the Academy discounted rate:

<u>Software</u>	<u>IYA Short-Term License at USC Bookstore</u>
Adobe Creative Cloud	\$70 2021-2022 annual license

Apple Logic Pro	\$35 semester license
Solidworks	\$35 semester license
Apple Final Cut Pro	\$35 semester license

1. Visit the USC Bookstore online:
<https://www.uscbookstore.com/usciyasoftware>
2. Select the software license(s) you would like to purchase.
3. When you proceed to checkout, add the Promo Code "IYASoftware" (This will override the listed taxes).
4. For shipping, select FedEx Home Delivery (free).
5. Once you complete your online purchase, you will receive a confirmation email/receipt.
(Note that even if a shipping charge appears on your invoice, it will not be charged to your credit card. This relates to a known technical problem with the Bookstore's online store.)
6. Upload your receipt [here](#) to receive access to your purchased license.
7. You will be notified by email when the license has been activated

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Assignments	Deliverables
Week 1	<p>What is creative technology?</p> <ul style="list-style-type: none"> ● LECTURE Students will get an overview of creative technology and learn the different types of applied technology through real world examples. 	<p>Assignment #1.1: Describe two creative technology projects that inspire you.</p>	
Module 1: 3D Storytelling			
Week 2	<p>VR: Three Dimensional Storytelling</p> <ul style="list-style-type: none"> ● LECTURE Students will be introduced to 3D storytelling through the application of non-linear narrative in VR experiential design. 	<p>Assignment #1.2: Improve an existing film scene as a 3D VR experience READ: Virtual reality storytelling as a double-edged sword</p>	<p>DUE: Assignment #1.1 Students present Assignment</p>
Week 3	<p>VR: Virtual Group Interaction</p> <ul style="list-style-type: none"> ● LECTURE Building on the previous lecture students will explore how group dynamics will change storytelling as users are able to interact with one another in VR experiences in real time. ● DEI: How can digital storytelling provide for inclusivity and accessibility? 	<p>Assignment #1.3: Write a script for a 3D VR film READ: A Longitudinal Study of Small Group Interaction in Social Virtual Reality</p>	<p>DUE: Assignment #1.2 Students present Assignment</p>
Week 4	<p>Haptic Communication</p> <ul style="list-style-type: none"> ● LECTURE Students will be introduced to haptic technology and will explore how the sense of touch can be incorporated into digital storytelling. ● DEI: How can haptic technology create a deeper narrative experience for the visually - impaired? 	<p>READ: Applications of Haptic Technology, Virtual Reality, and Artificial Intelligence in Medical Training During the COVID-19 Pandemic</p>	<p>No Assignment Due</p>

<p>Week 5</p>	<p>Student Presentations</p> <ul style="list-style-type: none"> ● LECTURE Students will read their 3D VR film scripts and discuss the implications of 3D storytelling on entertainment as well as other narrative-based industries. 		<p>DUE: Assignment #1.3 Students present Assignment</p>
<p>Module 2: Language Processing</p>			

Week 6	Machine Learning: Text Generation <ul style="list-style-type: none"> ● LECTURE Students will learn how machine learning is changing the nature of content creation through data driven text generation. 	Assignment #2.1: Create an A.I. Text Generated Story READ: Robo-writers: the rise and risks of language-generating AI	No Assignment Due
Week 7	Machine Learning: Language Processing <ul style="list-style-type: none"> ● LECTURE Following on from the previous lecture students will be introduced to machine learning language processing through the application of conversational chatbots. ● DEI: Designing diversity and inclusion into conversational chatbots. 	Assignment #2.2: Create a Chatbot using Dialog Flow READ: Chatbots for learning: A review of educational chatbots for the Facebook Messenger	DUE: Assignment #2.1 Students present Assignment
Week 8	What is a hologram? <ul style="list-style-type: none"> ● LECTURE Students will learn the myths and realities of holograms and how language processing is bringing holograms to life. 		No Assignment Due
Week 9	Deep Fakes and Virtual Voices <ul style="list-style-type: none"> ● LECTURE Students will be introduced to Deep Fake technology and explore the implications on our society. 	Assignment #2.3: Create a Deep Fake READ: The Emergence of Deepfake Technology: A Review	DUE: Assignment #2.2 Students present Assignment
Week 10	Student Presentations <ul style="list-style-type: none"> ● LECTURE Students will present their own Deep Fake and discuss ramifications of the technology. 		DUE: Assignment #2.3 Students present Assignment
Module 3: Interactive Bodies			

<p>Week 11</p>	<p>AR: Body Transformation</p> <ul style="list-style-type: none"> ● LECTURE Students will be introduced to the technology of real time body tracking through the application of AR within the Snap platform. 	<p>Assignment #3.1: Create an AR Body effect using Lens Studio</p>	<p>No Assignment Due</p>
<p>Week 12</p>	<p>Wearables: Body interactions</p> <ul style="list-style-type: none"> ● LECTURE Following on from the previous lecture students will explore how wearables might incorporate AR as tool for information communication. ● DEI: Designing for all types of shapes and sizes. How can body tracking create inclusivity? 	<p>READ: A Survey on Wearable Technology: History, State-of-the-Art and Current Challenges</p>	<p>No Assignment Due</p>
<p>Week 13</p>	<p>Sensor Driven Sound Design</p> <ul style="list-style-type: none"> ● LECTURE Students will be introduced to the way musicians are utilizing new technology to create body-centric instrumentation. 	<p>Assignment #3.2: Design your own personal robot</p>	<p>DUE: Assignment #3.1 Students present Assignment</p>
<p>Week 14</p>	<p>Robot / Human Interactions</p> <ul style="list-style-type: none"> ● LECTURE Students will be introduced to the latest advances in robotic technology emphasizing human-to-machine interaction. ● DEI: How might robotic technology promote accessibility through automation. 	<p>Assignment #3.3: Design your own community robot</p> <p>READ: Exploring Behavioral Creativity of a Proactive Robot</p>	<p>DUE: Assignment #3.2 Students present Assignment</p>
<p>Week 15</p>	<p>Student Presentations</p> <ul style="list-style-type: none"> ● LECTURE Students will present and discuss their community robot assignment and the implications of an increasingly automated society. 		<p>DUE: Assignment #3.3 Students present Assignment #9</p>

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP)
-213-740-9355 (WELL)

<https://studenthealth.usc.edu/sexual-assault/>

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Relationship and Sexual Violence Prevention and Services provides immediate therapy services for situations related to gender- and power-based harm (e.g., sexual assault, domestic violence, stalking).

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

USC Policy Reporting to Title IX (213) 740-5086
<https://policy.usc.edu/reporting-to-title-ix-student-misconduct/>

The university encourages individuals to report prohibited conduct to the *Title IX Office*. Individuals can report to the university *Title IX Coordinator* in the *Office of Equity and Diversity*.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.