About Course Numbers:
Each Carnegie Mellon course number begins with a two-digit prefix that designates the department offering the course (i.e., 76-xxx courses are offered by the Department of English). Although each department maintains its own course numbering practices, typically, the first digit after the prefix indicates the class level: xx-1xx courses are freshmen-level, xx-2xx courses are sophomore level, etc. Depending on the department, xx-6xx courses may be either undergraduate senior-level or graduate-level, and xx-7xx courses and higher are graduate-level. Consult the Schedule of Classes (https://enr-apps.as.cmu.edu/open/SOC/SGSServlet) each semester for course offerings and for any necessary pre-requisites or co-requisites.

60-101 Transdisciplinary Research Studio I: Risk, Agency, Failure
Fall: 10 units
The first of the Transdisciplinary Research Studio foundation courses, Risk, Agency, Failure will be a primer course in thinking about the many ways that artists challenge conventions, experiment, and take risks through their artwork. The course will encourage students to explore foundational questions like: What can art uniquely do in the world? How can you playfully work with subjects and materials that are foreign and unfamiliar? How do you define success as an artist? How do you embrace failure as a productive part of the artistic process? How do you become comfortable breaking and remaking rules in art? The class will set up a structure for students to explore productive failure, encouraging them to take risks in a supportive environment and ultimately help students explore their own agency as cultural producers in the world. The course will additionally encourage students to explore the wide range of approaches to making that constitute artistic research. Students will play, experiment and explore, producing work from their unique perspectives and becoming comfortable with unfamiliar experiences, ideas, and materials. The class will have theory-driven prompts and no specific medium requirements.

60-105 Critical Theory in Art I
Spring: 9 units
Critical Studies 1 is the first part of a year-long course intended to introduce CMU’s students to key readings in the history of artistic theory, studied in relation with the concurrent development of Western art. It is devoted to the period ranging from the 1500s to the end of the 1800s and covers major artwork and theories spanning from the Renaissance to Symbolism and Primitivism. The course is structured as a seminar discussion of theoretical texts, integrated with lectures. Readings will introduce students to the historical and critical background of the themes discussed in class and familiarize them with the varied methodologies and argumentative styles proper to art criticism, critical theory and philosophy. Open to first-year students in the School of Art, or by permission of the instructor.

60-106 Critical Theory in Art II
Spring: 9 units
This is the second part of a year-long course intended to introduce CMU’s students to key readings in the history of artistic theory, studied in relation with the concurrent development of Western art. It is devoted to the period ranging from 1900 to 1960 and covers major artwork and theories spanning from Cubism and the historical avant-garde to totalitarian art and 1950s artistic research worldwide. The course is structured as a seminar discussion of theoretical texts, integrated with lectures. Readings will introduce students to the historical and critical background of the themes discussed in class and familiarize them with the varied methodologies and argumentative styles proper to art criticism, critical theory and philosophy. Open to first-year students in the School of Art, or by permission of the instructor.

Prerequisite: 60-105

60-110 Electronic Media Studio: Introduction to the Moving Image
Spring: 10 units
Electronic Media Studio: Introduction to the Moving Image is an introduction to the computer as a dynamic tool for time-based media production. In this course students develop skills in digital video and audio production through the exploration of narrative, experimental, performance, documentary and animation themes and forms. Historical and contemporary works are presented and discussed to provide a context for studio projects. Open to first-year students in the School of Art, or by instructor permission.

60-125 IDeATe: Introduction to 3D Animation Pipeline
Fall and Spring: 12 units
This class will explore computer animation as it pertains to a professional animation production pipeline. The course is designed to give students exposure to key job descriptions that align to the animation industry. Topics covered include: character design, world building, storyboarding, digital sculpture, look development, rigging, layout, animation, cinematography, lighting, and rendering. These topics are taught in 2-4 week sprints that allow a student to learn the fundamentals of each craft. In a mixture of class lectures, critiques, and training workshops, students will become acquainted with the necessary skills needed to create their own characters and animations. By completion of the course, students will be familiar with industry-standard best practices and ready to take advanced courses related to animation, vfx, and video game related pipelines. This course specifically offers insight on how the craft of animation is always evolving at top studios such as Walt Disney Animation Studios, Pixar, and Industrial Light and Magic.

Course Website: http://cmuanimation.weebly.com/

60-126 Introduction to Performance Capture and Rendering
Intermittent: 6 units
[IdenTe course] This mini is designed for those interested in the growing world of performance capture and visual effects. Utilizing the advanced motion capture facilities at Carnegie Mellon and the Kinect, students will learn how to capture motion from performance and apply it to CG characters and objects. While this technique is found in many video games and vfx movies, it has the ability to create endless possibilities within the realm of computer graphics and experimental animation/art. Students will also become more familiar with the process of rendering to create the necessary polish for their animations/visualizations. CG Lighting, camera work, and material shading are just a few of the many topics covered in this course.
Prerequisites: 15-104 Min. grade C or 62-150 Min. grade C

60-128 IDeATe: Real-Time Animation
Fall: 10 units
An introductory course that explores improvisational strategies for making animation within real-time computer graphics frameworks. Advancements in motion capture technologies, real-time 3D computer graphics engines, and visual programming tools for AV synthesis provide open frameworks for the exploration of animation in spatial and interactive contexts. Studio work will explore real-time animation in a variety of contexts, including screen-based interaction, site-specific installation, and spatial immersion. Conceptual frameworks drawn from the histories of video art, animation, and immersive media design will inform collaborative group work and class discussion.
Students without the prerequisite may register by instructor permission.

60-131 3D Media Studio I
Fall: 5 units
An introduction to three-dimensional form. Various materials and methods are explored through projects covering a broad range of sculptural concerns. Art majors must complete one topic of 60-131 and a different topic of 60-132 to satisfy the 3D requirement. Students are required to select two of the following four sections: Digital Fabrication: Assignments will encompass standard building/fastening techniques suited to laser cutters, CNC routers, and 3D printers (i.e. perforation folding, joinery, waftling, etc), as well as conceptual associations and interpretations of digital fabrication in contemporary art; Wood Construction & Assembly: In this introduction to sculptural construction, students will learn the basics of cutting, assembling, and building with wood using woodshop machinery and hand tools, as well as when and how to introduce a welded steel armature; More Than Mud - Clay Sculpture: Projects will introduce basic methods of clay construction and firing and will explore these techniques in a broader conversation about form, design and concept; Small Metals: This class will introduce fabrication and forming techniques in small scale metalworking, learning to cut, form, braze and color metals. Assignments will introduce techniques as well as sculptural and conceptual issues relevant to the medium. Materials fee may be required. Open to first-year students in the School of Art, or by instructor permission.
60-132 3D Media Studio I
Fall: 5 units
An introduction to three-dimensional form. Various materials and methods are explored through projects covering a broad range of sculptural concerns. Art majors must complete one topic of 60-131 and a different topic of 60-132 to satisfy the 3DI requirement. Students are required to select two of the following four sections: Digital Fabrication: Assignments will encompass standard building/fastening techniques suited to laser cutters, CNC routers, and 3D printers (i.e. perforation folding, joinery, waffling, etc.), as well as conceptual associations and interpretations of digital fabrication in contemporary art; Wood Construction & Assembly: In this introduction to sculptural construction, students will learn the basics of cutting, assembling, and building with wood using woodshop machinery and hand tools, as well as when and how to introduce a welded steel armature; More Than Mud - Clay Sculpture: Projects will introduce basic methods of clay construction and firing and will explore these techniques in a broader conversation about form, design and concept; Small Metals: This class will introduce fabrication and forming techniques in small scale metalworking, learning to cut, form, braze and color metals. Assignments will introduce techniques as well as sculptural and conceptual issues relevant to the medium. Materials fee may be required. Open to first-year students in the School of Art, or by instructor permission.

60-133 3D Media Studio II
Spring: 5 units
An introduction to three-dimensional form and fabrication processes. Various materials and methods are explored through projects covering a broad range of sculptural concerns. Art majors must complete one topic of 60-133 mini, and one different topic of 60-134 mini to satisfy the 3DI requirement. For 3D Media II students are required to select two of the following four mini sections: Multiples, Mold making and Casting; 3D Printing and Lasers; Mixed Media Mini-Installation; and More than Mud, Clay Sculpture. Materials fee may be required. Open to first-year students in the School of Art, or by instructor permission. Multiples: Mold-making and Casting - Students will explore basic mold making and casting techniques, understanding safety protocols and best practices using a variety of materials and processes, learning how to create uncanny reproductions of form and surface. 3D Printing and Lasers - An introduction to digital sculpting and model collage, as well as 3D scanning and photogrammetry. Students will also learn how to fabricate their models through processes related to 3D printing and laser cutting, while migrating concepts that deal with the ebb and flow of the digital and reality. Mixed Media Mini-Installation - Students to explore the use, processes and skills of combining a conglomeration of a wide array of materials including; new, found, reused, recycled and natural materials into meaningful, sculptural relationships with site specificity. More than Mud - Clay Sculpture - An introduction to three-dimensional form using the plastic material clay. Sculptural ideas will be presented on various approaches and techniques of clay artists, as well as other historic and contemporary artists.

60-141 Black and White Photography I
Fall and Spring: 10 units
This course will teach you the basic craft of photography from exposure of the negative through darkroom developing and printing to print finishing and presentation. Content includes student presentations, class discussions, shooting assignments, darkroom sessions and class critiques. We will concentrate not only on the technical aspects of photography, but also the aesthetics of seeing with a camera. The course concentrates on photography as a fine art — what is unique to it and the concerns that are shared with other visual arts, such as composition, tonal values, etc. and aims to equip students with an understanding of the formal issues and the expressive potentials of the medium. Lab fee and 35mm manual camera required. Each student is responsible for the cost of paper and film.

60-142 Digital Photography I
Fall and Spring: 10 units
This course explores digital photography and digital printing methods. By semester’s end students will have knowledge of contemporary trends in photography, construction (and deconstruction) of photographic meaning, aesthetic choices, and the use of color. Students will learn how digital cameras work, proper digital workflow, RAW file handling, color management and Adobe Photoshop. Through the combination of the practical and theoretical, students will better define their individual voices as photographers. No prerequisites.

60-150 2D Media Studio: Drawing
Fall: 10 units
This course focuses on the language, materials and concepts of drawing as foundation for all the visual arts. Initial emphasis on the development of perceptual, analytical, and structural drawing skills with increasing attention to idea development. Exposure to methods of creating pictorial and illusionistic space; recording the external world of light and form; and making visible the internal world of the heart, the mind, the soul. Experience with line, texture, tone, shape and mass; in a variety of wet and dry drawing media. Open to first-year students in the School of Art, or by instructor permission.

60-160 2D Media Studio: Imaging
Spring: 10 units
A continuation of Two-Dimensional Media Studio: Drawing. Includes an expansion of drawing to include multimedia approaches, painterly issues, digital input/output and work with digital image processing tools. Open to first-year students in the School of Art, or by instructor permission. Prerequisites: 60-157 or 60-150

60-200 Sophomore Review
Fall and Spring
Students present their work and their ideas about their work to a faculty committee. A successful review is required for advancement to the junior year. Although this is a non-credit course, it is required of all Art (BFA, BHA, BSA, and BCSA) sophomores.

60-201 Transdisciplinary Research Studio II: Publics
Fall: 10 units
The second Transdisciplinary Research Studio, Publics, introduces students to the wide range of approaches artists use to engage with different audiences, contexts and publics. TRS II: Publics acknowledges that all artwork exists within specific social and political conditions and embraces that context as a fundamental material of art-making. In this course, students will be asked to consider what artists’ roles and responsibilities could be - culturally, politically, and socially. Throughout this course, students will be introduced to interdisciplinary cultural practices which seek to critique, challenge and alter public systems and ultimately create artworks which explore power dynamics, subjectivity, institutional frameworks, accessibility and more. Through the production of art engaging with a variety of publics, real and virtual, students will explore the possibility of becoming active change agents in the world through making. This course will follow a similar format to the first Transdisciplinary Research Studio; students will respond to theory-driven prompts and are encouraged to take risks and explore a variety of different approaches to art-making, as each assignment will not have a specific medium requirement. Prerequisite: 60-101
60-202 Transdisciplinary Research Studio III: Futures
Spring: 10 units
In the third and final Transdisciplinary Research Studio: Futures, students will be asked the question, ‘what if?’ Looking backwards and forwards students will grapple with what futures might be possible, ideal, desirable, undesirable and more. Throughout the class, students will explore critical and imaginative world-making and utopian, dystopian, and ambiguous scenarios from a variety of perspectives through the act of making. In addition to speculating and imagining futures, students will explore various histories of the future - through mythologies, origin stories, science fiction, futurist movements across cultural contexts, and more. Students will respond to theory-driven prompts and are encouraged to take risks and explore a variety of different approaches to art-making, as each assignment will not have a specific medium requirement.
Prerequisites: 60-101 and 60-201

60-205 Critical Theory in Art III
Fall: 9 units
The Duchampian attack on traditional aesthetic categories has been the engine behind the distinctive shifts in postwar art. Photography, performance, conceptual proposals, installation art, film, video, and appropriations from mass culture play an equal part in contemporary visual culture. Duchamp's attack on art as an institution set the tone for other anti-modernist projects to follow which did not accept the 'white cube of the gallery' as their sole exhibition space (or measured worth as an artist). His notions of 'indifference,' (critique of aesthetic judgment), reproducibility, simulation, performativity, artist-as-curator, and interactivity between the spectator and the work of art set the stage for a host of innovative explorations by artists ranging from the Comibines of Robert Rauschenberg to the Mod-Spaceships of Mariko Mori. This seminar examines a tumultuous period in contemporary art and culture from 1960 to the mid-eighties, with special excursions into the aesthetics of commodification, phenomenology, materialism, conceptualism, semiotics, abduction, and technology. The impact of social movements and American foreign policies (i.e. Vietnam, Civil Rights, The Women's Movement, Globalism, the Aids Crisis) on the production and reception of contemporary art will also be examined. Open to sophomores in the School of Art, or by instructor permission.

60-206 Critical Theory in Art IV
Spring: 9 units
This seminar examines a period in contemporary art from the mid-1980s to the present in which artists and theorists questioned the differences between the politics of representation and, inversely, the representation of politics. Reeling from the AIDS crisis, the continuing and rising conflicts of post-colonial struggles, as well as the growing sense of a radical call for the recognition of, to borrow from Fred Moten, an undercommons-the dematerialization of the object of Art was suddenly not sufficient as the locus of critical aesthetic discourse. The post-Modern, Post-Medium, Post-Internet was the desire for a serious recognition of multiple social and aesthetic definitions at the level of institutions (both inside and outside contemporary art). Critiques of the Subject, of Cartesianism, of Whiteness, of Patriarchy, of Cis-Genderism, of Binarism abounded and works of art like Andres Serrano's Piss Christ (1987) or Chris Ofili's The Holy Virgin Mary (1996) were emblematic of the attack many artists staged on intolerance which gave rise to national and international political debates about the role of 'Art' in culture and civic life. We are still feeling the effects of these struggles - this seminar will attempt to make sense of this history, examining what has come to be termed the 'Culture Wars,' of the late 1980s and early 1990s in which issues that had been so hard-fought for in the sixties, i.e. women's rights over their own bodies, protection of the environment, issues of racism (recognition of difference), freedom of speech, separation of Church and State were under threat again. Specific excursions will be made into theories of abjection, intersectionality, precarity, relational aesthetics, and performativity. New media technologies, and especially the centrality of Social Media and Information Cultures, will be a special focus of the final weeks of the course.
Prerequisite: 60-205

60-208 Alternative Photography: Contemporary Antiquarian Printmaking
Intermittent: 5 units
This focused, making-based course explores antique, handmade printmaking/photography methods through contemporary techniques. Students will learn how to make light-sensitive papers, while creating their own negatives digitally, combining both processes in a traditional darkroom. Students will use the Van Dyke, Cyanotype, and Platinum printing methods from start to finish, creating handmade, unique images that are distinct from those made with digital processes alone.

60-210 Electronic Media Studio: Introduction to Interactivity
Fall: 10 units
Electronic Media Studio: Introduction to Interactivity (60-210) is an introduction to several tools for programming and computational media production within the context of the arts. In this course students develop the skills and confidence to produce interactive artworks, discuss their work in relation to the tradition of digital art, and engage new technologies critically. Section A has a slight emphasis on game making.

60-212 Electronic Media Studio: Interactivity and Computation for Creative Practice
Intermittent: 12 units
This is an intermediate level course in 'creative coding', interactive new-media art, and computational design. Ideal as a second course for students who have already had one semester of elementary programming (in any language), this course is for you if you'd like to use code to make art, design, architecture, and/or games — AND you're already familiar with the basics of programming, such as for() loops, if() statements, and arrays. This course satisfies the EMS-2 (60-210: Interactivity) requirement for BFA and BXA-Art majors. As with EMS-2, students in this course will develop an understanding of the contexts, tools, and idioms of software programming in the arts. Unlike EMS-2, this course additionally satisfies the computing portal requirement for CFA and Dietrich students pursuing IDEaTe minors and concentrations. (Students with no prior programming experience should register instead for 15-104, 15-110, or 15-112.) This is a 'studio art course in computer science,' in which the objective is art and design, but the medium is student-written software. The course develops skills and understanding of text-based, imperative programming techniques in a variety of popular open-source arts-engineering toolkits, including p5.js (JavaScript), Processing (Java), and openFrameworks (C++), with the aim of applying such skills to interactive art and design, information visualization, generative media, and other creative cultural practices. Rigorous programming exercises will develop the basic vocabulary of constructs that govern static, dynamic, and interactive form. Topics include the computational manipulation of: point, line and shape; texture, value and color; time, change and motion; reactivity, connectivity and feedback; interactive graphics, sound, and simulation; and the incorporation of various modes of input (sensors, cameras) and multimedia output.
Prerequisites: 15-110 Min. grade C or 15-112 Min. grade C or 15-104 Min. grade B

60-214 Photography and the Narrative of Place
Intermittent: 5 units
This half-semester course will use photography to develop understandings of our surrounding environments. Students will choose a single location to work in, photographing and researching its function in the community, its history, and its relationship to broader concepts and similar spaces. Weekly assignments will require students to work with photographic methods to construct a narrative that derives meaning from the complex connections between people, objects and the spaces they inhabit. Throughout the course, students will strengthen their understanding of the world, in which these tangible and abstract elements of our environments work together through in-class exercises, weekly discussions and critiques. The course work will culminate in a portfolio of the completed project. The class will study work and books by notable and emerging figures in the medium, including Robert Adams, Carolyn Drake, Roy DeCarava, Rinko Kawauchi, Alec Soth, Carrie Mae Weems, Zoe Strauss, Gregory Halpern, and Susan Lipper. Required readings will include essays and short stories by Wendell Berry, Rebecca Solnit, Teju Cole, Joan Didion, and Georges Perec.

60-218 IDEaTe Portal: Real-Time Animation
Fall: 10 units
An introductory course that explores improvisational strategies for making animation within real-time computer graphics frameworks. Advancements in motion capture technologies, real-time 3D computer graphics engines, and visual programming tools for AV synthesis provide open frameworks for the exploration of animation in spatial and interactive contexts. Studio work will explore real-time animation in a variety of contexts, including screen-based interaction, site-specific installation, and spatial immersion. Conceptual frameworks drawn from the histories of video art, animation, and immersive media design will inform collaborative group work and class discussion. Students without the prerequisite may register by instructor permission.
60-220 IdeATe: Technical Character Animation
Fall: 10 units
Technical Character Animation is a deep dive into the fundamental concepts of character animation and the Illusion of Life. This course will focus on building a foundation of body mechanics that demonstrate weight, balance, and authenticity. Through a series of strategically designed modules, students will gain a command of the 12 principles of animation, beginning with a ball bounce to more advanced block, spline, and polish workflows. This course is designed to give students exposure to the art of movement as it is done by animators in the fx, film, and game industries.
Course Website: http://tcacmu.weebly.com/

60-223 IdeATe Portal: Introduction to Physical Computing
Fall and Spring: 10 units
This practical project-based course covers the basic technical skills (including electronics, programming, and hardware) needed to build simple interactive objects with embedded behavior using the Arduino microcontroller. A sequence of projects challenge students to apply their technical skills in creative ways. For the final project, the class works with a local group of older people who serve as design clients; students conjure and build them functioning custom interactive assistive devices of a practical or whimsical nature. Sensor inputs covered include an ultrasonic ranger, thermometer, light sensor, and human inputs like buttons and knobs; outputs to affect the world include actuators such as motors, LED lights, speakers, and haptic feedback devices. This introductory portal course has no technical prerequisites. Readings and guest speakers address topics including design, disability, and aging. See courses.ideate.cmu.edu/60-223/s2018/work for examples of prior student projects. Contact rzach@cmu.edu with any questions about the course.
Course Website: https://courses.ideate.cmu.edu/60-223 (https://courses.ideate.cmu.edu/60-223/)

60-240 Unfolding Environments: The Intersection of Person and Place
Intermittent: 10 units
This course will use photography to explore our surrounding environments. Assignments will focus on editing and image sequencing, combining the practices of portraiture, landscape, still life and observational photography to create narrative work that explores the complex connections between people, objects and the spaces they inhabit. Throughout the course, students will strengthen their understanding of the ways in which these tangible and abstract elements of our environments work together, while also developing their technical abilities by working with color and black and white images and varied light sources. Students will also learn approaches to project development and digital workflow. Discussions, readings, gallery visits and critiques will provide an outline for completing assignments. The class will study work and books by notable and emerging figures in the medium, including Robert Adams, Rineke Dijkstra, Carolyn Drake, Roy DeCarava, Milton Rogovin, Judith Joy Ross, Rinko Kawauchi, Alec Soth, Larry Sultan, Carrie Mae Weems and Susan Worsham. Required readings will include essays and short stories by Wendell Berry, Rebecca Solnit, Robert Walser and Albert Camus.

60-241 Black and White Photography II
Fall and Spring: 10 units
Black and White Photography II continues developing your technical skills in analog photography by introducing medium and large format cameras and prints. Large format view cameras remain the state of the art in control and quality in both film and digital photography. These cameras as well as unusual panoramic and pinhole cameras will be supplied. This course emphasizes aesthetic development and personal artistic growth through individual tutorials and group critiques, and will help to build professional level photography skills. Additional topics include digital printing and negative scanning, advanced monotone printing methods, and a focus on exhibition and folio presentation.
Prerequisites: 62-141 or 60-141

60-242 Digital Photography II
Intermittent: 10 units
Digital Photography II combines digital and analog processes in both color and black & white. Students will gain experience with digital workflow, analog to digital conversion, virtual drum scanning and large format digital printing. Topics include trends in contemporary photography, professional practices, project development, narrative and serial work, and portfolio presentation. Students will be expected to develop their own self-directed projects throughout the semester culminating in a cohesive portfolio of their work. Readings, assignments, artist visits, critiques and discussions will give context to the practical work and help develop a wide ranging familiarity with the subjects. Prereq: 62-141 or 62-142 or equivalent or consent of instructor
Prerequisites: 60-141 or 62-142 or 61-141 or 60-142

60-244 Contemporary Photo Theory
Intermittent: 9 units
Because, you know, the photographs are more a question than a reply. (Sebastiao Salgado) A photograph is a moral decision taken in one eighth of a second, or one sixteenth, or one one-hundred-and-twenty-eighth. (Salman Rushdie) This seminar investigates current topics in photography and the image; our goals are twofold: identification of photo theory as it applies to current practice from both the viewpoint of maker and consumer. The course is designed to address philosophical issues for photographers working now and will favor conversation over written work; students are expected to fully participate in critical analysis and discussions. Readings include works by Roland Barthes, Stephen Shore, Susan Sontag, Hollis Frampton, John Szarkowski, Robert Adams, Italo Calvino, Berence Abbott, John Berger and James Elkins. No pre-requisites.

60-245 Portrait Photography
Intermittent: 10 units
Portraiture maintains a unique standing in photography for its direct and collaborative relationship between an individual and a photographer. This course will examine this relationship and the larger contexts which provide the conceptual framework for deriving meaning and understanding from an image of another person. We will study the theoretical and practical aspects of portrait photography in both studio and environmental settings, providing students with an understanding of the genre by developing both technical and conceptual skill sets. Students will utilize analog and digital equipment, learn studio lighting techniques, develop approaches to working with natural light, and explore methods of printing and presentation.

60-250 2D Media Studio: Painting
Fall: 10 units
This course serves as an introduction to technical, conceptual and historical practices of painting. Through a variety of painting experiences and presentations using acrylic media, students progress from observational exercises and exposure to materials and techniques to developing personal processes, imagery and ideas. Class sessions include technical demonstrations, illustrated lectures, personal and group critiques. Prerequisite: 60-160

60-251 2D Media Studio: Print Media
Fall: 10 units
Printmaking is a process based medium that produces multiples of original artworks. Students will create four works on paper using the following printmaking approaches: Relief (carved), Intaglio (engraved), Lithography (planographic), and Screen Printing (stencil). Each technique’s unique set of materials, processes and aesthetics will be explored. This course focuses on traditional tools and processes, but will include utilization of digital images and sources through a critical lens. While primarily focused on the learning of fundamental techniques, the class will also expose students to ways that Print Media can be a tool (physically and conceptually) in contemporary practice. Open to sophomores in the School of Art, or by instructor permission.
Prerequisite: 60-160
60-333 IDEATE: Animation Rigging
Fall: 10 units
Animation Rigging explores processes for building digital skeletons and control systems to drive computer animated forms. This course investigates vital techniques and concepts to create expressive, fully articulated characters for computer animation, film, and game production. Beginning with rigging fundamentals, coursework will advance through various systems and methods that are needed to convey motivated movement and expression in a variety of character forms. Certain key topics include kinematics, joint orientations, driven keys, direct connections, space switching, corrective blend-shapes, custom attributes and graphic user interfaces (GUIs), skinning and deformation. Additionally, coursework provides an introduction to scripting methods for rig creation, including expressions, Python, and MEL. Students will be provided a valuable range of tools that meet production standards for animated film and game creation, as well as a necessary conceptual framework to enable complex problem solving at all levels of rig creation. Anyone interested in the artistic and technical sides of computer animation are encouraged to enroll. Previous experience with Autodesk Maya/3D animation is preferred.

60-350 Professional Development for Creative Practices
Fall and Spring: 9 units
This course is intended to expose students to the basic business skills and functions used every day in creative practices and industries. Supporting a creative practice—whether an individual studio practice, temporary collaboration or commission, or an incorporated business or non-profit—will require a foundational knowledge of basic organizational, legal, and financial structures and practices. Students can expect to develop a starting knowledge of business operations, problem-solving skillsets that can be applied to their own practices, and tools for evaluating and taking advantage of new opportunities. Topics covered will include, but are not limited to: basic business structures; intellectual property and artists’ rights; agreements, contacts, and employment; generating revenue, tax implications, and financial management; negotiation and compromise; and elements of business strategy development. This course assumes no prior background in business education or administration experience.

60-352 NOISE: Toward a Critical Theory of Sound and Hearing
Intermittent: 9 units
This seminar will explore audio art in its widest sense: sound sculpture and installations, radio art, the soundtrack, just about anything audible but not conceived as music. Special focus on the production (and reception) of sound by artists, amplifying those creative efforts that, in having explored acoustics, soundscapes, and listening, might also serve to inspire students to incorporate sound in their own work. Contemporary critical theory, by and large, is still glaringly silent on aurality and auditory phenomena; it seriously fails to consider sound as an object of study, instead focusing quite exclusively on visual culture (film, TV, video, computer screens, which are, of course, technologies of vision and sound). This seminar will address this roaring silence by examining some suggestive but disparate theoretical work related to sound and by engaging with a range of artistic practices that explore the production and reception of sound itself.

60-353 Critical Studies: Media Performance - History, Theory, and Contemporary Practice
Intermittent: 9 units
During the last decade of the twentieth century, new technologies have transformed the way we think about live performance. By examining the use of media (analog and digital) across the areas of sound/music, dance, theater, performance art, gaming, and installation, this course will traverse multiple theories and practices of performance history. With an eye to how changing theories of performativity have influenced how artists think about what it means to ‘perform,' this seminar, in a sense, will be engaged in both philosophical and aesthetic research about how technology has changed the conventions of performatrice art practice. What was the role of technology in the dematerialization of the object of art? How have ideas about virtual, parallel worlds changed the way artists think about the ‘performing body'? If technology once acted as a prosthetic device, increasing an artist’s sensual and perceptual world, what happens to the role and impact of an artist’s work in the seemingly inert realms of programming or the increasingly autonomous areas of Robotic Intelligence? What does art look like in a post-internet age?

60-362 Art Writer
Intermittent: 9 units
ART WRITER will strive to bring together the intersecting discourses of artists use of writing as an object, art criticism, as well as experiments by both artists and critics to use theory as invention. The idea of experiment implied here emphasizes the urgency that art writing move beyond its own history, beyond the received understanding of its proper practices in order to propose new modes of critical reflection. The form and material force of language will be explored through the conceptual and critical work of Dan Graham, Lawrence Weiner, Donald Judd, Lee Lozano, Joseph Kosuth, Vito Acconci, Mel Bochner, Eleanor Antin, the international projects of Art and Language, Fluxus, as well as more recent iterations. This is a writing intensive seminar with experimentation at its core. Members will workshop their writing: revise, rethink, perform, and publish.

60-366 Culture in the Public Realm
Intermittent: 9 units
The seminar offers a discerning critical overview of key concepts about culture, public space & the public sphere. We will introduce & critically explore the historical, theoretical & practical production & use of 'public space'. & art/culture beyond the museum or gallery. We will consider the historical evolution of the city as both an actual & theoretical entity. The class will explore urban environments in terms of economics, demographics, political, cultural production & psychology & the city of Pittsburgh will function as our site laboratory. We will inquire about the function of public art/what happens when space is required for the public realm for a means of cultural production that aims to yield some form of transformative effect for the ‘Public’ or citizens at large. Moreover the term ‘public’ is an important topic to be investigated: Who is the public? Who is the audience? This interdisciplinary course will consider & examine the interplay of artists & their public & how certain belief systems of a society at a specific time are able to influence a culture's perception of art. What is the role of the artist, critic, curator & urban planner in relation to the public & what is at stake in utilizing public space as a platform for art & other forms of cultural production? We will reflect on why have we become in recent times so preoccupied with public space as a platform for cultural production. Changing attitudes among artists & in museums have played a role in this cultural shift & theory. We will query a range of cultural mediums in order gain insights into the construction of public culture. The means to inspect the varied issues will go beyond assigned readings: it will include class discussions, personal reflections, writings, videos & guest speakers from the field of architecture, public policy, art, & public art. A conjoint class student project will take place to further probe this subject.

60-371 Breathless: International New Wave Cinemas
Intermittent: 9 units
What does Jean-Luc Godard’s ‘Breathless [A’bout de souffle] (1959) have in common with Wong Kar-Wai’s ‘In the Mood for Love’ [Fa yeung nin wa] (2000)? What does Satyajit Ray’s ‘Pather Panchali’ (1955) share with Mark LaPore’s ‘The Glass System’ (2000)? By examining an array of films from the classic days of International New Wave Cinemas, beginning with French Nouvelle Vague, Indian Parallel Cinema,’ as well as German, Italian, Japanese and cultural norms. By focusing on mise-en-scene over thematics, on-site locations over studios, lesser-known actors over box-office idols, and small production teams over professional crews, these directors were able to turn lo-fi aesthetics and financial shortcomings into a radical new filmic style. Especially central here will be how forms of cinematic experimentation translated internationally—and how these approaches continue to challenge hegemonic forms of media culture.

60-380 Color Photography and Digital Output
Fall and Spring: 10 units
This is a course using digital photography with digital printing methods. Students will gain an understanding of color theory and aesthetics, while better defining their individual voices. By semester's end, students will have a finely printed body of work using Mac OS, RAW file handling, color management and Adobe Photoshop.
Prerequisites: 62-141 or 60-141 or 51-265
60-397 Critical Studies: Art, Conflict, and Technology
Intermittent: 12 units
This course considers the period of violence in Northern Ireland from 1968 to 1998 known as The Troubles, and recent issues pertaining to sovereignty and borders caused by Brexit. A British proposal seeking a peace process from the European Union, as a point of comparison between societies rife with strife, division and predilections to violence. We investigate the ways in which visual art to literature to theatrical performance explores and interrogates societal conflict and emergence from conflict, and how evolving technological systems influence political power dynamics and modes of artistic practice. We will use the legacy of societal conflict in Ireland and Northern Ireland to compare concepts and physical manifestations of borders, barriers and bridges in the region and in global contexts. We will examine fluctuating development of democratic processes in Ireland and Northern Ireland, individual and group public performance, and the influence of technologically crude and highly sophisticated tools on communities emerging from strife. We will use our analytical lens to focus on figurative and literal borders, barriers and bridges to explore work produced in Belfast, Derry and Dublin, alongside circumstances and artistic practice in present-day Pittsburgh, Ciudad Juarez, Jerusalem and Soweto. On a visit to Ireland and Northern Ireland over spring break, students will meet with artists, writers, legislators, community organizers, academics and ex-combatants, to learn about their past experience and current motivations. Students will analyze artistic practice, peacekeeping initiatives and performance of identity in relation to the historical framework from which it emerges in Ireland and Northern Ireland. We will use this foundation as a point of comparison to practices throughout the world. Students will process their experiences and developing analytical skills by documenting their responses through original creative work.
Course Website: https://youtu.be/r-hFgS2zmdh0

60-398 Critical Studies: Social History of Animation
Intermittent: 9 units
Social History of Animation will investigate the history of animation from early experiments with trick film through the development of major studios, to independent animation, web based work and emerging forms. Animation will be analyzed and related to social movements and technological innovations that affected animators and their work. This class will read related texts and view examples from around the world to explore animation as a means for personal expression and as a reflection of the context in which they were made.

60-399 Art History/Theory Independent Study
Fall and Spring: 9 units
A tutorial course in which an Art student works individually on a self-generated project under the supervision of a School of Art faculty member. Prior to enrolling in Independent Study, the student must complete an ‘Independent Study Proposal’ form (available in the bins on the 3rd floor of CFA) which is signed by the faculty member and the Assistant Head of the School of Art. Prerequisite: Art junior or senior status, or by instructor permission.

60-400 Senior Review
Spring
Students present their work and their ideas about their work to a faculty committee. This review affords graduating students the opportunity to analyze and summarize their work, and to engage with a faculty committee in discussion about issues that face an artist preparing to enter a career in art. Although this is a non-credit course, it is required of all Art (BFA, BHA, BSA and BCSA) seniors.

60-401 Senior Studio
Fall: 10 units
The primary goal of Senior Studio is to create a context for students to develop and realize a comprehensive and self-defined creative project. With the guidance of faculty, each student will pursue their own artistic goals and develop their ability to sustain focused artistic activity while developing their own voice. Additionally, Senior Studio will help students to: Foster a community and shared sense of purpose in an atmosphere of mutual support, critical dialog, knowledge exchange and camaraderie; Cultivate and apply professional practice skills by preparing for life after graduation; Participate in studio visits with a multidisciplinary team of faculty, visiting artists and critics; Collaboratively produce a successful Open Studio event on the last day of the semester.

60-402 Senior Studio
Spring: 10 units
Students continue a comprehensive two-semester capstone project. Each student pursues an ambitious and cohesive body of work with guidance by a team of School of Art faculty. Multimedia, multidisciplinary, and collaborative work is encouraged. Studio work is supplemented by group critiques, workshops on writing, professional presentation skills, career preparation, and technical instruction as needed. Attendance at all 6:30pm School of Art Lecture Series events is required for this class. Open to seniors in the School of Art, or by instructor permission.

60-403 Senior Critique Seminar
Fall and Spring: 10 units
Senior Critique Seminar comprised of group discussions that analyze the conceptual and aesthetic frameworks that surround each student’s individual studio practice. The course supports independent inquiry, mature studio practice and both an in-depth critical reading of visual art and an increased comfort in the articulation of ideas and processes. Each student can expect two or more hour-long critiques throughout the semester, paired with ample time for individual studio work. These course discussions will also be informed by the Visiting Artist Lecture series and concepts and concerns carried from studio and academic seminar classes.

60-406 Advanced ETB: Internet Resistance
Intermittent: 10 units
Through booms and crashes, colonization and disruptions, IPOs and LOLZ, Internet has been a spectacular laboratory of social conflict. But what can artists do on the net beside tweaking their pitiful portfolios and sinking into social media malaise? What is the function of the network in the age of pervasive surveillance, fake news, and filter bubbles? How to Internet under the First Troll President of the United States? Internet Resistance is both a schizo-seminar about critical issues in cyberculture and a trans-media studio to develop terrible ideas for the networked society. http://internetresistance.molleindustria.org/
Prerequisites: 60-110 or 60-210

60-407 IDEaTe: Experimental Sound Synthesis
Spring: 9 units
This is a course that will guide students into the world of experimental approaches to music and sound production, with particular emphasis in some of the key practices and concepts developed in the 20th and 21st centuries. We will examine a variety of ways in which sound works are made and perceived; understanding the historical perspectives and critical viewpoints of each approach through the application of hands-on practicum. The topics covered in the course are divided into three large areas: the art of sound, the use of technology in the production of sound works, and the creation of interdisciplinary sound installation. Students from different disciplines will work together to collaborate on the designing, prototyping and execution of a series of ambitious projects in response to the topics covered in class.
Course Website: https://courses.ideate.cmu.edu/57-344/

60-408 Advanced ETB: Digital Storytelling and Resistance
Intermittent: 10 units
Digital Storytelling & Resistance is a class through which students will explore the varied ways artists use contemporary technology to create complex alternative stories to dominant media narratives as well as the ways in which video, film, performance and media artists have historically used hybrid documentary storytelling practices and appropriation as a way to resist, respond to, and deconstruct one-dimensional news media and pop cultural stories. In this course students will create video essays, remix and appropriation-based works, hyperlinked interactive stories, modded games, written pieces and interactive moving-image based narrative works through new multimedia publishing platforms.
Prerequisite: 60-110

60-409 Advanced ETB: Video & Performance
Intermittent: 10 units
This studio course will concentrate primarily on the historical and ongoing relationship between video and performance. That said, this course will be flexible enough to allow students to create video, performance and video/performance projects. For structured projects, all students will be expected to participate in performance. Class time will be spent considering the history of performance and video/performance, viewings of primarily video/performance works to provide background and inspiration, presenting and critiquing student projects and studio time to work on projects. Technical instruction in video editing, compositing and effects, audio recording/editing and midi applications will be offered on an as needed basis.
Prerequisite: 60-110
60-410 Advanced ETB: Moving Image Magic: Visual Effects and Motion Graphics
Intermittent: 10 units
Fly like Harry Potter, fall into Alice’s looking glass, create new worlds, or take a head-trip into the inner reaches of your subconscious. It’s all possible in Moving Image Magic! This course serves as an introduction to the creation of extraordinary cinematic visions using a variety of analog and digital tools and techniques. These include: digital compositing, miniatures, motion tracking, rotoscoping, matte painting, puppets and motion graphics. Primary software tools are After Effects and Photoshop with forays into, Motion, Resolve, Logic and Smoke. Prerequisites: Electronic Media Studio: Introduction to the Moving Image or instructor permission.
Prerequisite: 60-110

60-412 Interactive Art and Computational Design
Intermittent: 12 units
This is an advanced studio course in arts-engineering and new media practice, with a special emphasis for Spring 2016 on mapping and information visualization using geographic data. Topics surveyed in the course will be tailored to student interests, and may include: experimental interface design, locative and mobile media, data-driven activism, image processing and computer vision-based interactions, and other topics. Through a small number of exploratory assignments and a public capstone project, students will bolster interdisciplinary problem-solving abilities and explore computation as a medium for curiosity-driven experimentation. Enrolling students are expected to have demonstrable programming skills, without exception, beyond the level of an introductory class such as 15-112. Although the course will provide technical overviews of major visualization toolkits (including D3, Processing, and openFrameworks), assignments may be executed in the student’s preferred programming environment. Graduate students should register for section 51-882, 60-712, or 62-726, which meets with the undergraduate sections 60-412 and 51-482.
Prerequisites: 15-112 or 15-110 or 60-112

60-413 Advanced ETB: Real-Time Animation
Intermittent: 10 units
An introductory course that explores improvisational strategies for making animation within real-time computer graphics frameworks. Advancements in motion capture technologies, real-time 3D computer graphics engines, and visual programming tools for AV synthesis provide open frameworks for the exploration of animation in spatial and interactive contexts. Studio work will explore real-time animation in a variety of contexts, including screen-based interaction, site-specific installation, and spatial immersion. Conceptual frameworks drawn from the histories of video art, animation, and immersive media design will inform collaborative group work and class discussion. Students without the prerequisite may register by instructor permission.
Prerequisites: 60-210 or 60-110

60-414 Advanced ETB: Animation Art and Technology
Spring: 12 units
Animation, Art, and Technology is an interdisciplinary course cross-listed between Art and Computer Science. Faculty and teaching assistants from computer science and art teach the class as a team. It is a project-based course in which four to five interdisciplinary teams of students produce animations. Most of the animations have a substantive technical component and the students are challenged to consider innovation with content to be equal with the technical. The class includes basic tutorials for work in Maya and Unity leading toward more advanced applications and extensions of the software such as motion capture and algorithms for animating cloth, hair, particles, and immersive technologies.
Prerequisites: 60-333 Min. grade C or 60-125 Min. grade C or 60-110 Min. grade C or 60-220 Min. grade C

60-415 Advanced ETB: Animation Studio
Fall: 10 units
This is an open animation studio for students who want to improve existing animation skills and develop a personal animated short. The class will introduce a variety of techniques and concepts for animation production. Using both 2D and 3D tools, animation will be explored through short assignments designed to develop diverse skills and ideas. Each student will develop and produce a short animation. The class will engage in discussion and critique of each others work along with examples of historic and contemporary animation.
Prerequisites: 60-125 Min. grade C or 60-333 Min. grade C or 60-110 Min. grade C or 60-220 Min. grade C or 60-218 Min. grade C

60-416 Advanced ETB: Documentary Storytelling
Intermittent: 10 units
In this class students will develop projects which use a variety of narrative concepts to convey stories in new ways. We will begin with a core practice around video, audio, and expand into internet media, performance, physical media and installation. Emphasis will be placed on story structure and strategies for choosing a media most appropriate to the narrative as well as the desired audience. Works by Janet Cardiff, Errol Morris, Spalding Gray, Werner Herzog, Laurie Anderson, This American Life and others will be mined for inspiration. With permission of instructor. We will also examine and discuss a range of historical and contemporary strategies employed by art makers who have used forums from on-line and virtual spaces to physical and site specific venues to expand and explore the relationship between the art object and the audience.
Prerequisite: 60-110

60-417 Advanced ETB: Open Video
Intermittent: 10 units
Moving images are everywhere! In museums, galleries, movie theaters, performances, concerts, billboards, televisions, on every computer and every communications device. With so much media competing for our attention, how do artists create work that will break out and find an audience. Who are some of the important moving image artists today? Where do they exhibit and distribute their work? How do they build community? Find an audience? Participate in meaningful discourse? In Adv. ETB: Open Video students will create self-directed moving image based projects in a seminar/studio based class that poses these questions and more. Experimental strategies and techniques explored may include but not be limited to: narrative, essay, installation, performance, animation, activism, visual music, abstract, personal, audio-visual systems. Class time will consist of screenings/discussions of contemporary and historical moving image art, visiting artist presentations, technical and conceptual workshops, studio time and presentation and critique of student work. Additionally we will research and discuss the changing contexts for the creation, exhibition and distribution of moving image work. Readings will include theoretical, historical and critical texts related to the field.
Prerequisite: 60-110

60-419 Advanced ETB: Experimental Game Design
Intermittent: 10 units
A hands-on game design course focused on innovative and expressive forms of gameplay. In this installment of Experimental Game Design the emphasis is placed on all aspects of remote play: online multiplayer games, streaming culture, MMORPG interventions, transnational gaming communities. If face-to-face activities are still disrupted by the Coronavirus pandemic, the online component will be deeply integrated in the coursework, and will involve workshops in Minecraft, Second Life and Twitch. Topics will include: network protocols for online games, telecommuting tools, source control, streaming, and cloud gaming technologies. The class consists in one long session per week that allows for extended prototyping exercises (mini-jams), technical tutorials, lectures, and in-depth playtesting sessions. Projects are team-based. Some programming experience is required.
Prerequisites: 15-112 Min. grade C or 15-110 Min. grade C or 60-210 Min. grade C or 60-212 Min. grade C or 15-104 Min. grade C

60-422 Advanced ETB: Experimental Animation
Spring: 12 units
[IdaTe course] This class will examine animation production from the student's perspective. Animations that explore both form and content will be developed and discussed. Topics will include: non-linear narrative, visual music, puppetting, non-traditional materials, manipulation of motion and performance capture data and immersive environments.
Prerequisites: 60-110 or 60-220 or 60-333

60-428 Advanced ETB: Art of Robotic Special Effects
Intermittent: 10 units
Inspired by the early 'trick' films of George Melies this project-oriented course brings together robotics and film production technique to create innovative physical effects and infuse cinema with the wonder of live magic. Students will learn the basics of film production using animatronics, camera motion control, and live composting, then apply them to create short films all the way from concept to post-production. The course emphasizes real-time physical effects to explore the immediacy and interactivity of improvisation and rehearsal. The course includes a brief overview on the history of special effects and robotics to set the work in context.
60-429 Advanced CP/ETB: Digital Worlds: Making and Performing in Digital Contexts
Intermittent: 10 units
In this class students will look at digital spaces including social media, chatrooms, online galleries, phone applications, YouTube, 3D renderings, massively multi player online games, and more to produce works that respond to the specificity of these terrains. There is a rich history of site specificity and contextual practice in the physical world; this class will consider parallels in computer-based environments. In addition to theory and research components, students will develop a variety of technological skills in video production, webcasting, audio editing, gif animation, 3D modeling, and more in this course.
Prerequisites: 60-110

60-430 Advanced SIS: Open Sculpture
Intermittent: 10 units
Sculpture is perhaps the broadest field among the contemporary visual arts. Through its privileged relationship to the physical world and the viewer's body, sculpture is the glue that connects the interdisciplinary practices of object, installation, interactive art and performance. In this class we build on skills and concepts learned in 3D media 1 and 2 to develop students' individual approach. Students define independent responses to topics proposed through discussion of contemporary sculptors. Emphasis is placed on individual development. Students are encouraged to explore interdisciplinary approaches.

60-431 Advanced SIS: Installation
Intermittent: 10 units
This course explores a broad range of sculptural issues concerning the practice of Installation Art. Studio focus on relatively large scale works which often involve an ensemble of objects or phenomena in a particular space. Both temporary and permanent works are addressed. Emphasis on research about 'place' and the proposal process for a specific context. Various strategies, methods and materials investigated through projects, readings, presentations, discussions and field trips. Exercises and projects assigned initially, but students expected to establish their own projects later in the semester.

60-433 Advanced SIS: Why Not Mud - Clay Sculpture
Intermittent: 10 units
Clay is a primary building block of sculpture. This supple, responsive and versatile material is being incorporated into the work of many contemporary artists today. This class will ask students to create projects that explore the use of clay as a medium in the context of their own work. It is intended for students who would like to specialize in clay sculpture, as well as students who work primarily in other mediums. Projects will originate from self-generated ideas. Class critiques will stress group participation to broaden viewpoints and sharpen critical abilities. The majority of class time will be for studio projects. The use of mixed media is allowed. A materials fee is required.

60-435 SIS: Metals
Intermittent: 10 units
Studio focus on fabrication using light metalworking techniques including forming, joining, and finishing. Metalsmithing and jewelry techniques will be explored in the context of sculptural issues. Metal stretching, forging, brazing, texturing, small scale casting and coloring are also presented. Slides looking at small scale metalwork, as well contemporary sculpture using metal techniques will be presented periodically. Metals provided include copper, brass, and bronze sheet and wire. Materials fee will also cover silver solder and other expendables. This is a repeatable class that will add to the tools and techniques acquired in earlier metals classes while expanding individual growth within the concept and context of sculpture.

60-438 Advanced SIS: Intimate Objects
Intermittent: 10 units
The intimate object - exploring the issues of small scale sculpture. This class will deal with the creation of objects that require a one on one interaction with the viewer. Unlike much heroically scaled sculpture, there is a distinctly personal and intimate connection that these objects engender. The class will look at historical examples, as well as 20th century works starting with the dada and surrealists. Problems of small scale sculpture will include topics such as the miniature versus actual size, the nature of materials, the issues of craftsmanship, the problem of preciousness. This class is open to advanced sculpture students working in any media.

60-446 Advanced SIS: Expanded Theater Fusion Studio
Intermittent: 10 units
[IDEAte collaborative course] As the boundaries between theater, art, entertainment and everyday life continue to expand through engagement with new technologies, it is critical that emerging artists and technologists be provided with the tools, language, and vision to thrive in the new millennium. Expanded Theater will reanimate classical modes of performance with media, networks, robotics, locative applications, and mobile systems. Considering theater as an ancient technology of mass participation and social cohesion, this fusion studio explores how emerging technologies can expand upon the basic theatrical relationships in new and culturally relevant ways. Collaboration and integration of design, media and storytelling is critical to this approach. Experimentation with new forms can reanimate the basic values of theater; the essential nature of a live event, the possibility of visionary spectacle, and the creation of meaning in dialogue with an audience. Expanded Theater is an opportunity to explore avenues outside of traditional theatrical production modes and beyond each student's individual discipline. The curriculum combines resources from Carnegie Mellon's Schools of Art and Drama, Integrative Design, Arts, and Technology (IDEAte), the Emerging Media Masters (EM2), Computer Science, the Robotics Institute, and their collaborators across the university in a new configuration. Expanded Theater will explore domains ranging from site specific and network-based performance and interventionist practices, to pervasive social media technologies and their influence on interpersonal communication. The goal is to investigate contemporary languages that allow authors, actors and technologists to collaborate in ways that push beyond our present understanding of theatrical production and reception. This course alternates between two modes of research and design.

60-447 Advanced CP: Art at the End of the World
Intermittent: 10 units
The world is awash today in stories that anticipate an end to the world as we know it. These daunting narratives often anticipate technoc-apollopele, global pandemics, runaway climate change and mass extinctions. Their scale can appear to dwarf the actions of individual humans, and yet this is exactly where the work of the artist is proportionally most significant. Artists write the myths that help us understand the present, and create the monuments that explain the present to the future. They sound the alarm in a new configuration. Expanded Theater will explore domains ranging from site specific and network-based performance and interventionist narratives, both utopian and dystopian, as well as the cultural responses to them. We will be using these as launching points for creatively engaging with our present apocalyptic predicaments. Students will visit regional locations that provide real-world grounding for these stories. They will use joy, introspection, humor, and courage, to create works using the full range of artistic expression from the highly ephemeral to the timeless. This course may never be offered again.

60-450 Advanced DP3: Drawing
Intermittent: 10 units
Hypothetically, a drawing remains outside of time. A drawing is an indelible desire, an instant caught, a thought preserved. A drawing's beginning, joy, introspection, humor, and courage, to create works using the full range of artistic expression from the highly ephemeral to the timeless. This course may never be offered again.

60-450 Advanced DP3: Drawing
Intermittent: 10 units
Hypothetically, a drawing remains outside of time. A drawing is an indelible desire, an instant caught, a thought preserved. A drawing's beginning, joy, introspection, humor, and courage, to create works using the full range of artistic expression from the highly ephemeral to the timeless. This course may never be offered again.

60-450 Advanced DP3: Drawing
Intermittent: 10 units
Hypothetically, a drawing remains outside of time. A drawing is an indelible desire, an instant caught, a thought preserved. A drawing's beginning, joy, introspection, humor, and courage, to create works using the full range of artistic expression from the highly ephemeral to the timeless. This course may never be offered again.
60-451 Advanced DP3: Concepts of Figuration
Intermittent: 10 units
This course encourages creative exploration of the human image beyond observational figure drawing. We will be thinking of the figure as a symbol to explore narrative, anthropological, cultural, sociopolitical, gender, and dream-life imaging. Through these lenses the figure becomes primary to the understanding of personal or group identity, place, sexuality and gender identification. Figure drawing is open to the use of traditional and extreme image making methods including observational and fictional representations or other conceptual premises relevant to the successful presentation of privately held concerns. Emphasis will be on experimentation with both material and image. The class will consist of studio time, critique, readings, and discussion.

60-452 Advanced DP3: Color
Intermittent: 10 units
In this advanced course, students will learn to employ a wide range of color theories and color systems through hands-on exercises and studies. Studies will be done primarily in paint, with some use of collage and digital media. These exercises will be aimed at mastering a variety of color approaches that will be applicable to each student’s own artistic practice. Students will develop, based on their own interests, a cohesive body of work in which to practice and expand on the skills learned through the directed exercises. Studio work will be augmented by lectures, demonstrations, critiques, readings and critical discussion of writings about color.
Prerequisites: 60-150 or 60-157 or 60-160
Course Website: https://sites.google.com/view/color-spring-2020-merrell/home

60-453 Advanced DP3: Painting
Fall and Spring: 10 units
This course is designed to help promote a painter’s development, both conceptually and technically. It encourages students to expand their ideas through a diverse set of projects. Through research and studio experimentation, students will explore issues of scale, surface, materiality, process and performativity in painting. They will also consider notions of the ‘picturesque’ and how non-artistic disciplines can inform painting. Lectures and assignments are designed to enrich the painter’s conceptual and technical base and to promote creative growth.
Prerequisite: 60-250

60-458 Advanced DP3: Serigraphy
Intermittent: 10 units

60-460 Advanced DP3: Paint/Print
Intermittent: 10 units
Paint/Print encourages creative exploration of the boundaries between print media and painting through material investigation, thereby eliminating any assumed hierarchy between the two modes of working. Painting and printmaking are open to the use of traditional and extreme image making methods including observational and fictional representations, abstraction, collage, installation, digital drawing/painting or other conceptual premises relevant to the successful presentation of privately held concerns in imagemaking. Emphasis will be on experimentation with both material and image. The class will consist of studio time, critique, readings, and discussion.
Prerequisites: 60-251 and 60-250

60-461 Advanced ETB: Experimental Capture
Intermittent: 12 units
This is an interdisciplinary course in experimental media practices that arise from using devices to ‘capture’ the world. We will survey state-of-the-art techniques and emerging ideas, to record objects, people, places and events in ways that go beyond the limits of human perception. The course evaluation will be project-based, in which students will capture a wide variety of things, and develop projects around the data they collect. We will cover a wide range of unusual devices and techniques for acquiring information about the world, including panoramic and hyperspectral imagers, depth sensors, 3D scanners, photogrammetry, motion capture systems, face-trackers, hand-trackers and eye-trackers, binaural and ultrasonic audio, and more. Through these explorations, we seek the visual cues of exotic, forgotten and nascent image capture technologies.

60-463 Advanced DP3: Print/Draw
Intermittent: 10 units
This course will focus on the development of technical and conceptual strategies in drawing AND/OR print media. With students working in either or both areas, the class will function as a studio workshop in which students set personal goals and strive to produce a significant body of work. Students will be expected to experiment and to create their own problems/limitations, while investigating a range of materials and considering the relationship between form and content. Individual and group critiques will help guide students; presentations on artists, readings, and field trips will contextualize the group’s work.

60-464 Advanced DP3: Expanding the Graphic Novel
Intermittent: 10 units
In this course, students will critically and creatively engage with the medium of comics to learn how to better communicate their ideas in this format as well as challenge its boundaries. A substantial portion of the course will focus on familiarizing students with the basics of storytelling in a sequential narrative format and creating opportunities for students to discover, hone and explore their own voice and style. In addition to creating new work, students will also explore the history of comics and the origins of the ‘modern’ graphic novel. Students will also be exposed to both graphic and non-graphic artists whose works has challenged and redefined the genre. We will explore these artists in order to understand how our own work borrows from and draws upon a rich lineage. Students will also be expected to think beyond the commonly accepted notions of comics and to question the relevancy of their work in this medium. Finally, each student will produce a new body of work that will culminate in the production of a 4-5 ‘page’ sequential narrative.

60-468 Advanced DP3: Print Media - Out of Print
Intermittent: 10 units
This fast-paced Advanced Print Media class begins with collecting out-of-print ephemera as the source inspiration for creating new images using any technical process or conceptual strategy from the Print Media tool box. This is a high output, low stakes class that emphasises Making and Doing as the key foundation for a generative creative practice. This class will include visits to used bookstores and library special collections for source images and hands-on workshops at local print studios and letterpress shops. Students will have access to Screenprint, relief, intaglio, lithography, scanners, large format digital printing on both paper and textile, xerox, risograph, laser/cnc aided print matrixes etc. Students will explore alternative distribution methods (portfolio exchanges, zines, artist books, gifs, instagram, tumblr) of the graphic image to recirculate images and texts that were out-of-print.
Prerequisite: 60-251

60-472 Advanced DP3: Mutable Landscape
Intermittent: 10 units
With camera in hand, students will explore, document and invent a sense of place in Pittsburgh. Informed by photographic history and landscape studies, students will develop their own portfolios of digital prints. As a CFA Interdisciplinary photography course, students will be encouraged to consider their photographs in the medium of their home department, and in some cases as a starting point for projects in other materials. No prerequisites.

60-475 Advanced DP3: Open Print
Intermittent: 10 units
This advanced Print Media course focuses on student-driven development of a studio practice focused on contemporary print, multiples and distributed art. In this class, individuals will continue to build on technical skills and concepts, and the interdisciplinary applications of both, through self-directed, individual approaches. This course is for advanced students of art, ready to focus on larger-scaled, conceptually and formally ambitious projects that are formed from long-term investigations.
Prerequisites: 60-476 or 60-473 or 60-475 or 60-468 or 60-474

60-476 Advanced DP3: Serigraphy (Screenprinting)
Intermittent: 10 units
This course is a comprehensive and intensive study of Serigraphy (screenprinting), one of the most versatile and contemporary of printmaking techniques. The course is focused upon the mastery of this process. Students will explore multiple methods of image making (from hand-drawn to digital imaging) and will be introduced to CRIYK printing. The emphasis of this course is on artistic work on paper, but will also be exposed to the ways that screenprint can work across a wide range of different media: from 2D (paper, canvas, cloth) to 3D (book forms, sculpture, installations) and utilizing printed multiples in participatory and exchange based artworks.
60-486 The Art and Science of Color
Intermittent: 10 units
This interdisciplinary course will consist of a combination of chemistry lecture & labs with studio art & art history. The focus of the course will be on the intersection of painting practice with chemistry, particularly in the study of pigments of mineral & inorganic origin. This is a project course open to majors in chemistry & art. The course & its projects are designed to expand the expertise of students in each discipline, while exposing them to the methods, demands, & aims of the other. Historically, the craft of painting was closely linked to the practice of pigment manufacture, with painters procuring their materials in raw form directly from the chemist/apothecary, & often performing themselves the final purification & grinding of the minerals into pigments. Color has been used by both artists & alchemists as a benchmark for tracking changes while creating new materials based on minerals found in nature. With the advent of mass-produced & marketed art materials in the nineteenth century, the distance between chemist & artist increased until the two worlds have little to do with one another. This class aims to reconnect the two disciplines for a study of their common ground. Students will learn about the origin of the color of minerals with primary focus on colors that originate from electronic transitions & will work collaboratively on hands-on laboratory research projects that involve the synthesis, characterization, & use of inorganic pigments. In the studio, they will make their own egg-tempera paints, & use them in painting projects designed to increase color skills as they learn about the history of pigment use. Students will collaboratively design & carry out final projects which combine research, experimentation & creative work. A series of researchers who work at the boundary between art & chemistry will give guest lectures, & the class will make field trips to local research labs & museums.

60-487 Advanced CP: The Amateur
Intermittent: 10 units
If a contemporary artist can truly do and be anything, how come so much art looks the same? More and more contemporary artists are pushing beyond the conventional media and methods of the art world by strategically operating as ‘professional’ amateurs. The term amateur reflects a voluntary motivation to create as a result of personal passion for a particular activity, regardless of expertise or authority. For the artist, embracing the role of the amateur allows for the use of any profession, institution, or social activity as a possible material within their creative practice. This includes artists who ‘perform’ as amateur preachers, psychologists, geneticists, politicians, and exotic dancers; artists who create amateur institutions like sanatoriums, circuses, hair salons, talk shows, and planetariums; and artists who collaborate with professional hypnologists, ornithologists, stunt coordinators, ventriloquists, and diplomats in order to manifest their work. Students in this class will work on self-defined projects that utilize the role of the amateur as a critical method for expanding the breadth and reach of their art practice into new forms and venues. With faculty mentorship, each student will be responsible for developing their projects through independent research, apprenticeships, and collaborations with experts in fields relevant to their work. Workshops, lectures, and in class critique of ongoing work will look at contemporary trends related to amateurism in art practice, theory, and the world at large. This class is not about being an amateur artist, but about being a serious artist who uses amateurism as a tool. Thus the class is only open to students with ???

60-490 Advanced CP: Art of Mapping/Mapping as Art
All Semesters: 10 units
Many artists have used maps as inspiration, and for some, maps are integral to their work. Maps purport to objectively represent territory while revealing the biases of their authors. This course will question conventional notions of objective cartography and look at how artists have creatively and critically used various forms of mapping. As well as geographical and physical space, the course will consider representations of psychological space, social space and conceptual space. Definitions of mapping will be extended to include information visualization, diagrammatic systems, geographic infrastructures, aerial photography, landscape interventions, and journeys through space and time. Following a few initial short assignments, students will devise their own projects later in the semester.

60-491 Advanced CP/ETB: Art AFTER The End Of The World
All Semesters: 10 units
The world is currently consumed by the very real experience of living through events that are regularly described as apocalyptic. There is no more urgently important moment to be an artist. Artists imbue the present with meaning and invent futures worth striving towards. In this course, students will take a deep dive into the myths of end times, from the oldest human stories up to the present moment, and take those lessons into our near future. Readings, screenings and field-trips (virtual and/or RL) will fuel group discussion and the development of new artistic works across a range of physical and screen-based media. Research in science, biology, ecology will inform the development of unique self-defined creative practices that embrace joy, humor, and courage. This course will culminate in the production of a major live event collaborating with students from the School of Music’s Exploded Ensemble.

60-499 Studio Independent Study
Fall and Spring
A tutorial studio in which an Art student works individually on a self-generated project under the supervision of a School of Art faculty member. Prior to enrolling in Independent Study, the student must complete an ‘Independent Study Proposal’ form (available in the bins on the 3rd floor of CFA) which is signed by the faculty member and the Assistant Head of Academic Affairs of the School of Art. Prerequisite: Art Junior/Senior status and by instructor permission.

60-590 Internship
Fall and Spring
Art Internships are open to all BFA, BHA, BSA and BCSA Art students. Internships may take place with appropriate individuals or organizations within or outside of Carnegie Mellon University. The requirements for an internship are in the School of Art Handbook (available at the School of Art website). Prior to being enrolled for an internship, students must complete an Internship Proposal Form, which defines the goals of the internship. This form must be signed by their site supervisor and approved by the Assistant Head of the School of Art. Forms are available in the bins on the 3rd floor of CFA, Junior and Senior Art majors only.

60-761 Experimental Capture
Fall and Spring
Performance capture is used in applications as varied as special effects in movies, animation, sports training, physical rehabilitation, and human-robot/human-computer interaction. This course will survey state-of-the-art techniques and emerging ideas, in the industry and in academia, to capture, model, and render human performances. The course will be a mix between lectures and discussion of recent progress in human motion capture and analysis. The course evaluation will be project-based, in which students will capture their own body and face motion, and build projects around the data they collect individually and as a group. We will cover: 1. Capture Techniques: We will describe and use various systems including motion capture, video-based capture, depth sensors, scanners, and eye-page trackers; 2. Modeling and Representation: We will cover classic and contemporary representations of face and body pose and motion, including statistical and physics-based techniques; 3. Rendering Applications: As new rendering paradigms emerge, new applications continue to develop. We will study recent progress in animation, synthesis, classification, and rehabilitation on new forms of displays. Please note that there may be usage/materials fees associated with this course.