COLLEGE OF DESIGN AND ENGINEERING

TBD

AFFILIATED FACULTY

Karen L. Collins
BA, Smith College; PHD, Massachusetts Institute of Technology
Professor, Integrative Sciences; Professor, Design and Engineering Studies; Professor of Mathematics; Edward Burr Van Vleck Professor of Mathematics

Courtney Gaston
BA, Centenary College La; MFA, University of Iowa
Assistant Professor, Design and Engineering Studies; Assistant Professor of Theater

Elijah Huge
BA, Yale University; MAR, Yale University
Associate Professor of Art; Director, College of Design and Engineering Studies; Associate Professor, Environmental Studies; Associate Professor, Design and Engineering Studies

Yu Nong Khew
MAR, Southern California Institute of Architecture
Assistant Professor of Art; Assistant Professor, Design and Engineering Studies

Christian Hart Nakarado
BA, Yale University; MAR, Yale University
Assistant Professor of Art; Assistant Professor, Design and Engineering Studies

Marcela Oteiza
BFA, University of Chile; MFA, California Institute of Arts
Associate Professor, Latin American Studies; Associate Professor, Bailey College of the Environment; Associate Professor of Dance; Chair, Theater; Associate Professor, Theater; Associate Professor, Design and Engineering Studies; Associate Director, College of Design and Engineering Studies

Sonia Roberts
BA, Vassar College; PHD, University of Pennsylvania
Assistant Professor, Design and Engineering Studies; Assistant Professor of Computer Science

Francis W. Starr
BS, Carnegie Mellon University; MS, Boston University; PHD, Boston University
Professor, Molecular Biology and Biochemistry; Chair, Physics; Professor, Integrative Sciences; Professor, Design and Engineering Studies; Professor of Physics; Foss Professor of Physics

CHAIR

Elijah Huge
BA, Yale University; MAR, Yale University
Associate Professor of Art; Director, College of Design and Engineering Studies; Associate Professor, Environmental Studies; Associate Professor, Design and Engineering Studies

FACULTY

Elizabeth Chang-Davidson
BS, Massachusetts Institute of Technology; MS, Carnegie Mellon University; PHD, Carnegie Mellon University
Assistant Professor of Engineering and Applied Science; Assistant Professor of Design and Engineering

Daniel Moller
MS, Louisiana Technical University; PHD, Louisiana Technical University
Associate Professor of the Practice in Design and Engineering

SECTION HEAD

Greg A. Voth
BS, Wheaton College; MS, Cornell University; PHD, Cornell University
Professor, Integrative Sciences; Professor of Physics; Associate Director, College of Design and Engineering Studies

VISITING FACULTY

Gordana Herning
PHD, Princeton University
Visiting Assistant Professor of Design Engineering Studies

Ben Sulzinsky
Visiting Instructor of Design and Engineering Studies

Christopher S. Weaver
BS, Hobart and William Smith Colleges; CAS, Wesleyan University; MALS, Wesleyan University; SM, Massachusetts Institute of Technology
Distinguished Professor of Computational Media; Distinguished Professor of Computational Media

Professor X

- Integrated Design, Engineering, Arts & Society Major (https://catalog.wesleyan.edu/departments/cdes/ugrd-idea/)
- Integrated Design, Engineering, Arts & Society Minor (https://catalog.wesleyan.edu/minors/ugrd-idea-mn/)

IDEA110 Vectors to Volumes: The Fundamentals of Digital Fabrication
This project-based course will cover the fundamentals of digital fabrication in a hands-on introduction to software-driven object making. The central concern will be process rather than concept, with a firm focus on how instead of why, as well as best safety practices. Instruction will be given in four areas sequentially, each building on the last: Vector Design & Execution, 3D Modeling & Printing, CNC Wood Routing, and CNC Metal Milling. Machine setup and best practices will be taught alongside foundational knowledge of applications such as Adobe Illustrator, Adobe Photoshop, Vectric VCarve, Autodesk Fusion360, and Ultimaker Cura. Throughout the course, there will be a consistent emphasis on fabrication methods and finishing techniques.
Offering: **Host**
Grading: **Cr/U**
Credits: **0.50**
Gen Ed Area: **HA-IDEA, NSM-IDEA**
Prereq: **None**

IDEA120 Ecological Design I: Being at Home in the World
Being at Home in the World is an introduction to the skills and thinking involved in the ecologically responsible creation of objects. This course is intended to provide a foundational understanding of the language of design, sources of materials, and energy systems. The studio encourages students to develop a rigorous, iterative working method to deeply analyze the nature of land and resources, explore options, and test ideas. This process of making is complemented and supported by an introduction to the history and theory of design, training with techniques and equipment, and active practice in keeping a sketchbook. Early exercises and projects in the course build familiarity and confidence with analytical drawing, making, and modeling techniques, which build toward the creation of a novel piece of design work presented at the final review.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST220, ENVS232**
Prereq: **None**

IDEA154 Working with MATLAB
The content of this course focuses on learning the basics of utilizing MATLAB to program and solve basic problems. We will operate on the assumption that students have no prior experience with programming. The goals of the course will be to develop algorithmic thinking, problem solving, and quantitative skills within the context of MATLAB. The course will cover essential mechanics of programming, many of which are common to all programming languages, as well as some selected advanced topics. With the expectation that students with a broad background with various motivating factors lead them to enroll in the course, students will be invited to apply the skills learned in the course to completing the culminating final project related to their specific interests.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **0.50**
Gen Ed Area: **NSM-QAC, SBS-QAC**
Identical With: **QAC154, CIS154**
Prereq: **None**

IDEA160 Product Design I
In this introductory product design course, students will experience basic design processes such as problem identification and possible resolutions; the use of design development and communication skills via design observation and research; iterative process and prototyping; and representation and presentation in two and three-dimensional forms. Students will explore how design can play a role in our community and how it can impact our society. Students will work both individually and collaboratively in a studio environment. Field trips to New York City fabricators, galleries, and workshops may be expected as part of this course.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST270**
Prereq: **None**

IDEA170 Introduction to Mechanical Design and Engineering
This course will provide a hands-on introduction to design and engineering. Students will engage in individual and team projects in a studio environment where we seek to develop a shared practice and understanding of the engineering design process. We will study biological organisms to find inspiration for design of hoppers, swimmers, and climbers. Students will build skills using computer-aided design (CAD) software and using tools for fabrication and prototyping including laser cutting and 3D printing. We will also hone skills in identifying which scientific and engineering principles need to be understood to achieve design goals.
Offering: **Host**
Grading: **Cr/U**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Identical With: **CIS170, PHYS205**
Prereq: **None**

IDEA170Z Introduction to Design and Engineering
This course will provide a hands-on introduction to design and engineering. Students will engage in individual and team projects in a studio environment where we seek to develop a shared practice and understanding of the engineering design process. We will study biological organisms to find inspiration for design of hoppers, swimmers, and climbers. Students will build skills using computer-aided design (CAD) software and using tools for fabrication and prototyping including laser cutting and 3D printing. We will also hone skills in identifying which scientific and engineering principles need to be understood to achieve design goals.
Offering: **Host**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Identical With: **CIS170Z, PHYS170Z**
Prereq: **None**

IDEA173 Introduction to Sensors, Measurement, and Data Analysis
This course is an engineering fundamentals course supporting the Integrated Design, Engineering, and Applied Science (IDEAS) minor. It will involve a sequence of hands-on projects that introduce students to basic measurement devices and data analysis techniques using inexpensive modern sensors, a microprocessing platform (Arduino), and a computational software package (Matlab). The course will provide foundational knowledge of available resources and techniques that allow students to more confidently implement measurement systems in subsequent courses of the IDEAS minor and better understand experimental devices used in scientific research activities.
Offering: **Host**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Identical With: **CIS173**
Prereq: **None**

IDEA175 Introduction to Electrical Design & Engineering
Students will learn about engineering mechanics, electronic control systems, and physical actuators (e.g., for movement) using a microprocessor platform, sensors and motors. The final project will require a student team to ideate, design, analyze, and optimize a mechatronic system. This course will allow students to better understand components, methods, and challenges in mechatronics systems commonly found in automation and robotics.
Offering: **Host**
Grading: **Cr/U**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Identical With: **CIS175, PHYS206**
Prereq: **None**

IDEA180 Design Studies
This course examines the human dimensions of engineering and design by looking at the ways artifacts are designed, produced, circulated, and used in context. Rather than a comprehensive survey of movements or paradigms in the history of design, this course employs a thematic approach to understanding the ways objects can articulate and reflect social and cultural concerns. Through a series of readings, projects, lectures, and seminars, we will study the surprising ways everyday objects influence and articulate our identities, desires, biases, and experiences.

This course is intended to support students in developing a critical toolkit for use as designers, users, consumers, and citizens. Throughout the term we will seek to challenge our assumptions about the politics of design and interrogate the ways its products mediate and are changed through human activity. We will write about and visualize these relationships, thinking critically how objects are made, what makes them relevant, and whether things have the power to change our economic, environmental, and social realities.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-IDEA**
Prereq: **None**

IDEA185 Form and Code
This introductory survey explores practices in design and digital media through a sequence of design exercises, workshops, and hands-on projects. Advancing towards an independent final project, participants will hone their skills as makers and thinkers while developing a portfolio of original work for both print and web. While primarily concerned with visual experimentation and expression, this course exposes students to critical topics in media and design through readings, seminars and student presentations. Techniques surveyed in this course include: digital imaging and animation (Adobe Creative Cloud), creative coding (Processing), digital printing, and light fabrication.
Offering: **Host**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-CIS**
Identical With: **CIS185**
Prereq: **None**

IDEA185Z Form and Code
This introductory survey explores practices in design and digital media through a sequence of design exercises, workshops, and hands-on projects. Advancing towards an independent final project, participants will hone their skills as makers and thinkers while developing a portfolio of original work for both print and web. While primarily concerned with visual experimentation and expression, this course exposes students to critical topics in media and design through readings, seminars, and student presentations. Techniques surveyed in this course include: digital graphics, creative coding, and digital fabrication (if taught in person).

Students will require access to a personal computer and Adobe Creative Cloud. If the course runs remotely, students are responsible for locating these resources individually.
Offering: **Host**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Identical With: **CIS185Z**
Prereq: **None**

IDEA186 Text & Visual Imagination: Introduction to Eco Design for Performance
Eco-scenography is an introduction to design for performance. In this course, students will learn the core principles of design for performance while exploring sustainability and environmental practices with an emphasis on understanding of materials, such as production cycle and manufacturing process, as well as integrating environmental justice paradigms by analyzing specific case studies. Through three specific project-based assignments--1. object design, 2. garment design, and 3. environmental design--students will train their visual imagination, as well as develop an aesthetic literacy and knowledge of performance design concepts and practice within eco-sustainable practices.

This course counts towards the Theater Arts category for the THEA major.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-THEA**
Identical With: **THEA185**
Prereq: **None**

IDEA187 From Shirtwaists to Hoodies: Fashion and Public Life
Pictured prevalently and worn close to the body, fashion is a powerful and personal means of expression and documenting public life. With a focus on the United States, this course presents a loose chronology of fashion, from the late nineteenth century to today, through a selection of themes that will allow students to consider it in terms of its social, political, economic and aesthetic impact. Through the interplay of image, clothing, and text, each week, we will explore the fashion industry from various perspectives, examining the key role makers and consumers play in constructing fashion both historically and today. Guest speakers and museum visits will enhance these perspectives. Specifically, we will question the ways we deploy dress and style to document public life, from the personal to the political, and how it informs our material and visual relationships with the world. In addition to lectures and readings discussion, class time will be allotted to students' fashion documentation projects. Fashion theory will also be introduced to ground our explorations of fashion, variously as a pictured and cultural entity, embodied practice, site of technological innovation, and tool for shaping one's identity.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-CSPL**
Identical With: **CSPL187, FGSS187, SOC265**
Prereq: **None**

IDEA190 Digital Foundations
This course introduces the foundations of digital art through contemporary artistic practice. Students will research the history of digital art and examine relationships of digital media and contemporary art. The class has a theoretical focus on machine use within the process of art making while building foundational digital skills. Projects will focus on four key areas including: Digital Imaging, 3D Modeling and Virtual Design, Time Based Media, and Digital Fabrication. Building on these four areas the course will culminate in an individualized research based final project and presentation. Through experimentation, critical analysis, critique and peer review; students will generate a unique portfolio of digital art works.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST190**
Prereq: **None**

IDEA190Z Digital Foundations
This introduction to the digital studio engages software and electronic media as an expanded field of creative production in contemporary art and design. Through a sequence of workshops, exercises, and hands-on digital projects, students will develop their critical and creative toolkits and learn to conceive, refine, and present original work. Open to all skill levels, this course prioritizes sustained and rigorous engagement with digital practice as well as conceptual and formal problem-solving.

Workshops in image manipulation, compositing, motion graphics, and visual communication will be led synchronously online by the instructor. This will be complemented with weekly online studio sessions, discussions, screenings, and reviews. Students will be provided access to all course materials using Google Drive and other digital platforms. Access to Adobe Creative Cloud software will be provided by Wesleyan, but individual licensing is also encouraged. Course assistants will offer peer mentoring and technical support in person through the DDS and online through Zoom.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST190Z**
Prereq: **None**

IDEA200 Integrative Learning Project 1: Crafting Your Digital Identity
Wondering about how you will explain your Wesleyan experience to someone who doesn't get what it is like to attend an eclectic liberal arts institution? Worried about how your experiences at Wesleyan will translate to your post-graduate life? Want to practice talking about yourself so you are ready to enter the job market or apply for graduate school? This course is for you! Throughout the semester, you will practice writing about yourself and will ultimately place what you write in WordPress, the world's most popular platform for website design. Along the way, you will learn about user experience (UX) design principles and research methodologies, so that the website you create draws in your audience and makes them want to learn more about you. Throughout the semester, we will meet once a week to do all of these things in a relaxed, collaborative environment. Join us and bring along some friends!
Offering: **Crosslisting**
Grading: **Cr/U**
Credits: **0.50**
Gen Ed Area: **None**
Identical With: **WRCT200, RL&L250, AFAM250, CSPL200**
Prereq: **None**

IDEA203 The Secrets of Ancient Bones: Discovering Ancient DNA and Archaeology
New analyses of ancient DNA preserved for millennia in bones and soils have revolutionized the field of archaeology. Suddenly, archaeologists have gained new insight into human origins, past population migrations, ancient diseases, plant and animal domestication, and even the factors that contributed to the extinctions of megafauna such as woolly mammoths. Recent genetic case studies will provide a lens for learning about the archaeology of diverse world regions and time periods, from Oceania to Mesoamerica and from the Paleolithic through recent history. Topics will include: human evolution and genetic relationships between humans, Neanderthals, and Denisovans; the peopling of the globe; extinction and de-extinction; domestication and the origins of agriculture; paleodiseases and paleodiets; and ethics in genetic research.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **SBS-ARCP**
Identical With: **ARCP203, ENVS203, ANTH212, STS203**
Prereq: **None**

IDEA204 Introduction to Archaeology
What can fragments of pottery, stones, and bones reveal about the lives of people who lived thousands or even millions of years ago? What does the archaeological record reveal about human evolution, past human diets and health, ancient socioeconomic systems, and the emergence of early cities? And how can we preserve archaeological sites and artifacts for future generations? This course will introduce students to the interdisciplinary field of archaeology. We will discuss key methods and principles that archaeologists use to study the human past while covering a survey of world prehistory from the earliest stone tools to the archaeology of contemporary material culture. Students will have the opportunity to examine real archaeological artifacts--including artifacts excavated from historic Middletown--and will be encouraged to think critically about the ways that archaeology informs our understanding of both the past and the present.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **SBS-ARCP**
Identical With: **ARCP204, ANTH214, ENVS207**
Prereq: **None**

IDEA205 The Technological Primate: Archaeological Approaches to Ancient Technology
Humans are reliant on technology, in one form or another, for our survival. This obligate use of technology has been a characteristic of our evolutionary history for over 2.5 million years. This course will explore how technology became central to the human way of life. We will discuss both how and why our use of technology has changed through time. This includes considerations of the adaptive roles that technology plays in our evolution, how technology is shared between individuals and cultures, and the role of technology beyond the purely utilitarian. Students will learn about the ways archaeologists analyze and think about ancient technologies. This includes a wide variety of material types, including stone, ceramic, botanicals, bone, metal, and more. In this course students will have an opportunity to handle both actual archaeological materials and replicas.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-ARCP**
Identical With: **ARCP210, STS211, ANTH210**
Prereq: **None**

IDEA206 Experimental Archaeology: Material Science and Past Behaviors
The field of archaeology requires practical ways to move beyond modern observations of materials to the invisible behaviors that produced them in the past. Experimental archaeology generates analogical models for archaeological processes by manipulating modern materials under controlled conditions. The principles established during experiments are applied to archaeological data to reconstruct the behaviors that produced the material record. This course will consider experimental design and practice to address issues relevant at different stages of the archaeological process. This is inclusive of replication of past technologies, experimenting with natural and cultural formation processes, and addressing biases inherent in the methods used by archaeologists. The course includes hands on experimental labs with different types of material culture and critical discussions of published experiments. Students will also be tasked with designing, executing, and reporting on an archaeological experiment.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-ARCP**
Identical With: **ARCP360, ANTH360, STS363**
Prereq: **None**

IDEA208 Technologies of Time
Tracking the rhythms, cycles, and ruptures of collective life is essential for studies of sociocultural and environmental dynamics. Yet such studies are mostly undertaken with the unquestioned assumption that Western apparatuses of time reckoning and historical periodization can be applied as universal and stable frames of reference for all kinds of phenomena. Temporal units of years, months, days, minutes are used, rendering insensible relations that do not align with such

metrics. These simplifying moves limit our capacity to sense and understand continuity and change; they place many lives and landscapes at risk. This course draws from the social and ecological sciences, humanities, and arts to reimagine such simplifications. Through readings, creative exercises, and field trips, students are invited to notice, record, and engage with multiple temporalities of more-than-human worlds. For final projects, students will research and design speculative timekeeping devices or time machines for worlds otherwise.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-SISP**
Identical With: **STS208**
Prereq: **None**

IDEA209 Educational Gaming Lab: Project-Based, Game-Based Pedagogy Approaches
In the past two decades, crowdfunding and renewed interest in games--board games, role-playing games, digital games, and instructional games--have created an increased and diverse gaming production, which has become the subject of several studies, articles, and projects related to all areas of education, from hard sciences to language learning and the arts. In an effort to explore how a game-informed pedagogy can work in various types of courses and to highlight analog and/or digital gaming approaches that have worked inside and outside the language classroom, this course will explore the basics of game-based learning (GBL) and discuss how games of all kinds can inform pedagogical discussions and the creation of learning materials.

Educational Gaming Lab is designed as a project-based gaming laboratory that will focus on why and how analog games can be effective tools for pedagogy. Examples will include board games, tabletop role-playing games, escape games, and puzzles. Participants will discuss the application of gaming principles to various subjects and types of classrooms; then, they will engage in a final project in which they will either adapt existing games for specific learning outcomes or create brand new educational games. The course will be conducted in English and games will be created in English.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **SBS-EDST**
Identical With: **EDST210**
Prereq: **None**

IDEA210 How Things Fail: Mechanics and Materials
This lab/lecture engineering course is a foundational cornerstone of structural analysis and mechanical design. It will provide students with a theoretical and practical understanding of static equilibrium force systems, material response to loading, and analysis of failure modes for each of the fundamental types of stress and strain (axial, flexural, and torsional). These skills are vital for students from a range of disciplines, including mechanical engineering and architecture. The final project will require the design, implementation, and performance testing of an optimized structural system model, such as a truss bridge, building, or other structure.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-IDEA**
Identical With: **CIS210, PHYS210**
Prereq: **IDEA170 AND (PHYS111 OR PHYS113)**

IDEA211 Materials and Design Concepts for Structures
In this course we will explore how innovations in materials have inspired new forms and scales of structures in the built environment. Material discovery has influenced design, building methods, and performance of structures subjected to various forces and constraints of economy, technology, and time. Our case studies will analyze how systems built from wood, steel, concrete, masonry, and alternative materials impact people and the environment. Our inquiry into iconic structures including domes, bridges, and towers will consider structural behavior, aesthetics, and durability. Readings will provide historical context from heritage structures to recent advances in manufacturing techniques and contemporary works that are laser cut, 3D printed, or robotically assembled. Students will pursue research in an area of interest and gain hands-on experience building and testing scaled structures.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-IDEA**
Prereq: **None**

IDEA212 Metal Manufacturing Through the Ages: The Science Behind Metal and Impact of Metal in Society
Metal manufacturing has been key to societal change ever since humans first started using it, from the Bronze Age to the Iron Age to the Industrial Revolution to today. In this course, we will explore the science behind why metal is so important, from the molecular level on up. We will study heating and cooling of metals, learn how the structure of metals affects their material properties, and get hands-on experience shaping metal with a variety of processes. We will follow the lifecycle of metal from ore to raw material to finished parts, as well as how it gets recycled. Students will build engineering skills in reading phase diagrams, analyzing heat transfer setups, and understanding the material properties of a wide range of metals. Students will build machining skills both in shaping metal by hand and with modern metal shaping methods.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-IDEA**
Prereq: **IDEA170**

IDEA215 Introduction to Sensors, Measurement, and Data Analysis
This course is an engineering fundamentals course supporting the Integrated Design, Engineering, Arts, and Society (IDEAS) minor. It will involve a sequence of hands-on projects that introduce students to basic measurement devices and data analysis techniques using sensors, a microprocessing platform, and computational software. The course will provide foundational knowledge of available resources and signal processing techniques that allow students to more confidently implement measurement systems in subsequent courses of the IDEAS minor and better understand experimental devices used in scientific research activities. Students will complete a final team project of their choice (with approval) exploring areas of interest in measurement, data analysis, machine learning or other avenues. Some previous programming experience is expected. Prior experience in IDEA175 or with Arduino, Raspberry Pi, or other physical computing platforms are preferred, but not required.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-CIS**
Prereq: **None**

IDEA221 A Thousand Years of Iteration: Design for an Uncertain Future
The climate emergency is a product of design. Centuries worth of aesthetic and industrial innovation have created extractive infrastructure, efficient machines, and disposable products that make it increasingly easy to consume energy and resources on a global scale. As new conversations about just transitions, a circular economy, and a Green New Deal have begun to proliferate among

designers, the discipline's troubled relationship to notions of "progress" remains largely unquestioned.

This reading- and research-intensive studio asks students to examine this history of technology and to critically evaluate shifting theoretical perspectives on nature and human development as they relate to design. Topics will include the lifespan of buildings and products, relationships with and obligations to materials and resources, and strategies for de-growth in indigenous and vernacular design precedents. These will be studied through assigned readings and in-class discussion, a series of design exercises, and the production of a final project from materials immediately at hand in Middletown.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST221, ENVS227**
Prereq: **None**

IDEA222 Fluid Mechanics: Theory and Applications
This course focuses on the behavior of fluids under various conditions. Students will develop a framework to analyze situations involving stationary (fluid statics) or moving fluids (fluid dynamics), discover tools used to predict fluid behavior, and learn how to interpret aspects of this behavior. Homework problems and examples reviewed in-class will help students connect theory with real-world applications, particularly in the areas of mechanical, structural/civil, and aerospace engineering. At the end of this course, students should have the ability to solve simple fluid problems and apply those solutions in complex engineering situations.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **None**
Prereq: **None**

IDEA228 The Evolution of Audio in Interactive Entertainment; Creating Music with Limiting Technology
In the creative world, introducing limitations demands incredible innovation from an artist. Nowhere has this been truer than in video game audio. An entire generation has grown to hear complex worlds in just a small combination of oscillators and noise generators, and the lengths composers and sound designers went to craft those worlds is nothing short of astounding. In this course we will examine and emulate compositions which used the iconic sound architectures present in home consoles, taking us all the way from the implementation of Beethoven's Sixth Symphony in "Smurfs: Rescue in Gargamel's Castle" (1982), through David Wise's implementation of octave displacement in the NES classic "RC Pro-Am" (1988), the string of composers who all had to create homogeneous yet individualized soundtracks for the "Rockman" game series (starting in 1987), and landing in the nostalgic implementation of these architectures in the practically polar opposite games of SUDA 51: "Killer 7" (2005), "No More Heroes" (2007), and Toby Fox's "Undertale" (2015). Along the way we will cover sound design and emotional impact outside of chiptunes, one big example being the work of Akira Yamaoka in the "Silent Hill" (1999) series. This course will both serve as a survey of these games as well as contain practical projects, where you will be using tools to create work in a similar vein and where you will be presenting and dissecting the sound design of interactive entertainment which carries a particular meaning to you.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **0.50**
Gen Ed Area: **HA-DDC**
Identical With: **DDC228**
Prereq: **None**

IDEA229 Creating Audio in Interactive Worlds
Video games have struggled with the issue of audio repetition since their inception. Human existence thrives on entropy: our experience in the world is not defined by easily repeatable sequences, but by interacting with spontaneous behaviors and stimuli. Nothing takes a player out of a virtual world faster than countless NPCs saying "I used to be an adventurer like you, but then I took an arrow to the knee." Likewise, nothing destroys the ambience of a world faster than hearing the same combination of birds and running water over the course of hours. Thankfully, contemporary game design tools can make the process of emulating the natural world both possible and fairly intuitive. In this course we will examine the nature of what it means to create an organic-feeling virtual world and then employ the audio tools in the Unity engine, along with the adaptive sound design middleware FMOD, to craft organic sonic environments which will be both adaptive and varied. We will look at both historical implementations of ambience -- such as the Myst (1994) series -- as well as examine modern implementations of environmental audio. Special attention will also be paid to the theory and scholarship of audio in natural sonic environments outside of the realm of gaming, as these practices thrive when applied to virtual worlds.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **0.50**
Gen Ed Area: **HA-DDC**
Identical With: **DDC229**
Prereq: **None**

IDEA233 Studies in Computer-based Modelling and Digital Fabrication
This course operates at the intersection of design and production, introducing students to digital tools critical to contemporary architecture and design. Throughout the semester, students will develop a series of projects that fluidly transition between design, representation, and fabrication with an emphasis on understanding how conceptual design interfaces with material properties. The course will offer a platform for students to research, experiment, and, ultimately, leverage the potential of digital tools toward a wide array of fields and disciplines. Students will be expected to utilize the Digital Design Studio's resources, including 3D printers, laser cutter, and 4-Axis CNC mill, as well a selection of fabrication equipment housed in the school's metal and wood shops to represent, model, and realize a series of design projects.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST233**
Prereq: **None**

IDEA234 Architecture I
This course is a synthesis of fundamentals of design principles and introduction to design vocabulary, process methodologies, and craft. Emphasis is placed on developing students' ability to examine the relationship between production (the process of creating things) and expression (the conveying of ideas and meaning) involved in the making of architecture. The intent of the course is to develop students' awareness and understanding of the built environment as a result of the investigations, observations, and inquiries generated in the studio.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST235**
Prereq: **None**

IDEA235 Activism and Theories of Change
In this course we will explore strategies and theories of change that shape social justice movements, with particular reference to recent movements in the United States. We will discuss the benefits and risks of the many available strategies including direct action, grassroots mobilization, impact litigation, legislative campaigns, electoral campaigns, artistic protest, and public education. What strategic, ethical, or moral questions are raised by various types of protest and communications? The instructors will draw on their own experiences as activists for women's rights, queer rights, and social and economic justice. The course will be co-taught by Distinguished Visiting Professor of Public Policy Leslie Gabel-Brett and guest instructor Beverly Tillery, former Executive Director of the Anti-Violence project in NYC who will focus on the ways BIPOC and Queer BIPOC communities are reshaping the social justice landscape by addressing the safety of trans women, challenging the gender binary and reforming and ending the carceral legal system. We will allow time to apply the course concepts to events that are occurring in real time during the semester including current campus protests. The instructors are deeply committed to maintaining a safe space for inquiry and learning where divergent opinions are welcome and respected. This course will be relevant to students interested in public policy, feminism, racial justice, gender and sexuality studies, and other social sciences, and will provide useful insight for future organizers and activists, lawyers, and public policy makers.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **SBS-ALLB**
Identical With: **CSPL235, FGSS236, AFAM235**
Prereq: **None**

IDEA236 Fast & Furious
Fast and Furious is a class which explores the power of the multiple through the production of zines, posters, t-shirts, tote bags, pins and more. Beginning in the 1930s, the production of zines mainly in the sci-fi fan world became popular after the advent of the mimeograph--the first widely available duplicating machine. This way of making content was able to circumvent mainstream and institutional publishing models creating channels for more creatives to distribute their work. Today, there are even more technologies that can be used in the production of zeitgeist material. In this class, we will learn how to create with a Xerox machine, silkscreen, letterpress, polymer, and more. In each assignment we will contend with the power of quantity. What does it mean to make five of something? Ten? Fifty? One hundred? We will also experiment with format. How can a message be told through a wearable garment? How does the narrative change when it's a tote bag? And finally, we will explore the poetics of distribution. What are the artistic possibilities of a zine when it can be sent through the mail or left in a pile for the public?
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST236**
Prereq: **None**

IDEA243 Introduction to Graphic Design
This course will open your mind to the world of graphic design, both past and present. You will learn how to analyze and critique design in addition to how to present your work and convey your ideas to others. You'll explore various tools available to a designer including hand skills and computer software. Computers will simply be a possible tool to help complete each project - this is not a software class.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST243**
Prereq: **None**

IDEA246 Graphic Design: Website as Portfolio
Students will focus on the creation of an online portfolio of work as both an extension of their own practice and calling card for the world at large. Emphasis will be placed on the deployment of the site as a space for both interactive and graphic design and the development of writing about/documenting work and projects. Hard coding skills not necessary; focus will be on familiarization with user friendly sketching platforms, research organization systems, and out-of-the-box CMS for website development. Visiting artist talks will also be arranged.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST246**
Prereq: **None**

IDEA261 Science Materials For a Malagasy Classroom
Students will design and produce a variety of educational science materials to be used in a fifth grade classroom in Madagascar. These items include a science logo, bookmarks, educational science games, posters, and a comic book with conservation themes for children. Students who are interested in design and natural history as a means through which to communicate science themes on wildlife endemism, evolution, and climate change would be appropriate for this course. All students will need to conduct independent research into science topics, distill down the salient features, and use that information to design elementary school materials. Working both individually and in teams, students will conceive, design, critique, and move into product production (MakerSpace). In addition, prototypes of the materials will be reviewed and rated by fifth graders in a Middletown elementary school for feedback.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-BIOL**
Identical With: **BIOL161, ENVS261**
Prereq: **None**

IDEA267 Engineering Biology: Cells and Tissues
This course explores the intersection of biology, medicine, and engineering, where scientists are developing novel platforms to promote understanding, diagnosis, and treatment of human diseases. We cover modern techniques for manipulating biological systems, spanning single molecules to ensembles of cells. We will examine the trajectory of the field from studying cells in a plastic dish to the advent of organ-on-a-chip and organoid models and discuss how this transition from 2D to 3D biology has propelled increased understanding of both normal physiological homeostasis and also the pathophysiology of disease. Topics will include controlling behavior of cells through cell-matrix interactions, learning through building via synthetic biology, and advances in regenerative medicine. These topics will be explored through the thematic lenses of transport processes (supply of nutrients and removal of waste) and mechanoreciprocity (the sensing of and response to the physical properties of the cellular microenvironment). Lectures will review fundamental concepts in cell biology and physiology before delving into topical examples from current literature. Lectures and assessments will include opportunities to develop skill in thinking analytically and critically about using engineering tools to study fundamental questions in human disease, formulating original ideas and experiments, and communicating science through written and oral formats.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-BIOL**
Identical With: **BIOL267, BIOL567**

Prereq: **MB&B181 OR MB&B181Z AND MB&B182 OR MB&B182Z**

IDEA271 Biodegradable Design: Soft and Hairy
In this part seminar, part studio course, students will go on field trips and read extensively to develop an understanding of mycelium and how it is explored in design. We will explore temporality in design with particular focus on how biodegradable materials such as mycelium can form our experience of an object. We will study how mycelium can be utilized as a living material to form a built ecology. In particular, we will study how to design for impermanence -- sometimes using waste materials -- and develop an understanding for material recovery. Students will work both individually and collaboratively in a studio environment. Field trips to New York City museums, fabricators, and galleries, as well as around CT may be expected as part of this course.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST271, ENVS271**
Prereq: **ARST131 OR IDEA110 OR IDEA180**

IDEA275 Introduction to Archaeological Science: Natural Science Approaches to the Human Past
While archaeology is considered by many to be a social science, natural science approaches are increasingly utilized by archaeologists to explore past environments and behaviors. Archaeological science is defined as the application of scientific techniques from biology, chemistry, geology, and other natural sciences to archaeological materials. This course will survey the different scientific techniques employed by archaeologists and highlight their utility for exploring the human past through archaeological case studies. Students will consider how the integration of natural and social science approaches produces a more complete understanding of the archaeological record. This includes the reconstruction of climates, landscapes, diets, migrations, population interactions, production behaviors, chronologies, and more. Students will learn the basics of the archaeological applications of ancient DNA, stable isotopes, sedimentology, geochemistry, chronometric dating, 3D scanning, morphometrics, botany, zoology, and other scientific methods.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-ARCP**
Identical With: **ARCP275, ANTH275, STS275**
Prereq: **None**

IDEA285 Digital Projects Lab
This intermediate course in design engages form and process as vital lineaments in digital images, systems, and objects today. Through a series of short, hands-on, thematic projects, students will move past the basics of digital technique and challenge themselves to articulate how and why things appear as they do. Rather than focus on specific tools or software, assignments will straddle creative platforms and media, incorporating methods such as live signal processing, data moshing, remixing, and interaction design. Early assignments will address narrow thematic concerns while a long-term final project driven by students' own directives will be developed and executed in the second half of term.
Offering: **Host**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-CIS**
Identical With: **CIS285**
Prereq: **None**

IDEA286 Introduction to Time-Based Media
This course will serve as a comprehensive introduction to time-based media in the expanded field. We will explore the ways video can transform our relationship with ourselves, others, and the material world. Through regular technical exercises, readings, and group discussions, students will gain technical facility and a critical eye for time-based art and culture. What sorts of videos do we consider "art"? In an era of selfies, live-streaming, and state-sanctioned violence (and its digital record), how might we use video as a tool of empathy and accountability? We will pursue answers to these questions through the act of making. Students will be introduced to camera operation, sound recording, and lighting, as well as video and sound editing. Screenings of historical and contemporary video art will contextualize each assignment. We will also investigate vernacular applications of video, and the medium's role beyond the studio.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST286, DDC286**
Prereq: **None**

IDEA289 Displaying Clothes: Fashion in the Museum
What are clothes doing in the museum and why do they attract so much public attention? This course explores fashion exhibitions in history and the practice of fashion curation today, a key component of critical cultural analysis. Part curatorial workshop, part seminar, in this class students consider issues that influence professional curatorial practices through readings, discussions, and site visits. Topics include the origins of museums, museum architecture, the ethics and cultural impact of collecting and display practices, the role of dress and textile objects in art, history, and science museums, visitor experience research, and the challenges facing museums in the twenty-first century. As a group the students will work on an exhibition project, developing its organization and design, object selection and research, and accompanying texts and label writing.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-CSPL**
Identical With: **CSPL289, FGSS284, SOC279**
Prereq: **None**

IDEA291 East Asian Archaeology
This course will introduce students to remarkable archaeological discoveries from East Asia, focusing on the archaeology of ancient China, but also including finds from Japan, Korea, and Mongolia. Beginning with "Peking Man" and Asia's earliest hominin inhabitants, we will explore the lives of Paleolithic hunter gatherers, the origins of domestic rice and pigs, the emergence of early villages and cities, the origins of writing, ancient ritual systems, long-distance interactions through land and maritime Silk Roads, and the archaeology of Chinese diaspora populations living in the 19th-century United States. We will also consider the current state of archaeological research in East Asia, focusing on site preservation, cultural heritage management, and the political roles of archaeology.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-ARCP**
Identical With: **ARCP291, ANTH291, CEAS291, ENVS291**
Prereq: **None**

IDEA292 Interdisciplinary Project Lab
Interdisciplinary Project Lab fosters a holistic approach to engineering and design. Inviting students to reconcile vision with precision, hands-on coursework will involve a broad range of fabrication techniques, integration of systems, prototyping, and iterative design methods, culminating in a final project. The theme of this semester will be designing with light. The first half of the semester will focus on developing facility in both modeling and prototyping through digital and analog fabrication practices through a series of short, intensive design and engineering projects. Students will expand their knowledge of materials and

fabrication, develop skills for effective communication through visualizations and physical objects, and evaluate the efficacy of their designs. The second half of the semester will focus on a single project, developed in groups, planned in consultation with the instructors, and developed with feedback from all-lab reviews and individual desk crits. Complementing each of the lab projects, presentations and workshops will introduce the conceptual underpinnings of the course and develop requisite technical skills. IDEA292: Interdisciplinary Project Lab is a required course for all IDEAS linked major tracks in the College of Design & Engineering Studies. It may also be counted towards the IDEAS minor as an elective in most minor concentrations (see https://www.wesleyan.edu/codes/ for more information).
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-IDEA**
Prereq: **IDEA170 OR ARST190 OR IDEA285 OR IDEA175 OR ARST235**

IDEA300 Integrative Learning Project 2: Website Incubator
Have you developed knowledge or expertise about a topic through an internship, engagement in a student organization, time studying abroad, or through some other experience that you would now like to share with the world? This is the class for you! Throughout out the semester, you will work to translate your experience into a website. I will help you do this by asking you to think about the content you would like to share, the audience with whom you would like to share it, and the goal you have for that audience. Ultimately, you will share your experience through WordPress, the world's most popular platform for website design. Along the way, you will learn about user experience (UX) design principles and research methodologies, so that the website you create draws in your audience and makes them want to learn more about your chosen topic. Throughout the semester, we will meet once a week to do all of these things in a relaxed, collaborative environment. Join us and bring along some friends!
Offering: **Crosslisting**
Grading: **Cr/U**
Credits: **0.50**
Gen Ed Area: **None**
Identical With: **WRCT300, RL&L350, AFAM320, CSPL300**
Prereq: **None**

IDEA301 Technologies of Time
Tracking the rhythms, cycles, and ruptures of collective life is essential for studies of sociocultural and environmental dynamics. Yet such studies are mostly undertaken with the unquestioned assumption that Western apparatuses of time reckoning and historical periodization can be applied as universal and stable frames of reference for all kinds of phenomena. Temporal units of years, months, days, minutes are used, rendering insensible relations that do not align with such metrics. These simplifying moves limit our capacity to sense and understand continuity and change; they place many lives and landscapes at risk.

This course draws from the social and ecological sciences, humanities, and arts to reimagine such simplifications. Through readings, creative exercises, and field trips, students are invited to notice, record, and engage with multiple temporalities of more-than-human worlds. For final projects, students will research and design speculative timekeeping devices or time machines for worlds otherwise.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-SISP**
Identical With: **SISP208**
Prereq: **None**

IDEA305 Lighting Design for the Theater
This course will introduce students to the history, basic principles, and practical application of lighting design through lecture, discussion, demonstration, and practical application. Students will develop a deeper understanding of the methodology and applications of light in storytelling, which will help them communicate with collaborators. Students will have the opportunity to develop skills in computer drafting, lighting console programming, and script analysis for design. This course counts towards the Theater Arts category for the THEA major as a design course and towards the concentration category for the IDEAS Performance Design minor.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-THEA**
Identical With: **THEA305**
Prereq: **THEA105 OR DANC105**

IDEA308 Comparative Urban Policy
Cities are home to more than half of the world's population, generate more than 80% of world GDP, and are responsible for 75% of global CO2 emissions. Once viewed as minor political players with parochial concerns, they are now--individually and collectively--major players on the global stage. This course will examine how cities are coping with the major policy issues governing our lives--from waste management and public safety to energy and housing policy. We will be examining how policies differ between big cities and small cities, what cities in the global north are learning from the cities in the global south, and how cities are bypassing toxic partisan politics in their nations' capitals to form global networks promoting positive change. The class will involve local field trips and participant observation to see how some of these urban issues are playing out in the city of Middletown.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-GOVT**
Identical With: **GOVT308, CEAS308, ENVS308**
Prereq: **None**

IDEA311 Media and Environment: In/Sensible Worlds
In this seminar, we will examine the relationship between media technologies, sensory apparatuses, and changing environments. How do various kinds of media shape perceptions and interactions with our surroundings, multispecies ecologies, and planet Earth? How might we study the environment AS media? These seemingly simple questions matter because, like never before, media and environment co-produce who/what becomes sensible or insensible--and, ultimately, available or not available for life. This seminar will include readings from the fields of Critical Media and Communication Studies, Feminist/Postcolonial Science, and Technology Studies, Environmental/Digital Arts, and Humanities. Importantly, we will examine a range of creative media projects that explore ecology, environment, and earthly survival: films, games, sensors, and web projects.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **SBS-SISP**
Identical With: **STS311, ENVS333**
Prereq: **None**

IDEA320 Ecological Design II: Worn Out/Broken In
This course will function as a design studio that examines the afterlife of material production. While designers have traditionally focused their attention on the creation, distribution, and consumption of new products, this course asks students to carefully consider everything that follows those acts. By scrutinizing the use, care, maintenance, repair, and eventual demise of designed objects, students come to understand the intended and unintended consequences of

making. Rigorous observation and research lead to the creation of analytic drawings and models for presentation at project reviews.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST320, ENVS321**
Prereq: **ARST270 OR ARST235 OR ARST220**

IDEA321 Wood: Building with the Forest
This studio introduces students to full-scale design and construction through the production of a single, collaborative project over the course of the semester. Working from land-based research and precedent analysis, students develop a detailed design for a structure on a specific site in Middletown, then build it together in the field. Materials will be sourced from the northern hardwood forest and the design crafted to suit its ecosystem.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.50**
Gen Ed Area: **HA-ART**
Identical With: **ARST321, ENVS324**
Prereq: **ARST270 OR ARST235 OR ARST220**

IDEA333 Software Engineering
Software engineering is the application of engineering principles to the software development process. Eliciting requirements from stakeholders, designing the architecture of a program, performing usability studies, and testing a codebase are some of the aspects that elevate program development to software engineering. Focusing on web and mobile apps, students in this course will gain expertise in state-of-the-art frontend, backend, and mobile technologies, as well as related tooling. We will also cover the collaborative organization of software projects, software licensing, software business models, and ethical considerations for professional software engineers.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-MATH**
Identical With: **COMP333**
Prereq: **COMP211 AND COMP212**

IDEA336 Architecture II
This course is a second-level architecture studio whose focus will be a single, intensive research and design project. As the semester progresses, additional design, representation, and production tools will be introduced and used for developing work for the project, from graphics software to the laser cutter. Additional information about the architecture studio at Wesleyan and its past projects may be found at: http://www.facebook.com/wesnorthstudio
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.50**
Gen Ed Area: **HA-ART**
Identical With: **ARST336**
Prereq: **ARST235**

IDEA350 Computational Media: Videogame Development
This course examines the interplay of art and science in the development of contemporary videogames using the Unity development platform and commercial artistic game tools. Students develop a comprehensive understanding of computational media, including legal and commercial aspects, combined with hands-on experience in a creative process that integrates design, art, and coding. There will be discussions with invited industry leaders in various subject areas. Students will have the opportunity to work as part of development teams and create working prototypes to better understand the challenges and rewards of producing graphic interactive software within a professional context.
Offering: **Host**
Grading: **A-F**
Credits: **2.00**
Gen Ed Area: **NSM-IDEA**
Identical With: **FILM250, COMP350, CIS350**
Prereq: **None**

IDEA351 Videogame Architecture and Programming in Unity
Game Architecture and Programming in Unity centers around software design efficiencies and their application to real-time simulation and related interactive media. Students develop working prototypes with the Unity game engine, learn C# programming, and learn to appreciate the efficiencies of different software architectures and project structures. This class is intended to strengthen student knowledge and help bridge to classes such as Wesleyan's existing IDEA350/ COMP350 offering each Spring. By offering more comprehensive training in development platforms, as well as practical experience in technologies that accompany base programming when creating interactive media, students will have a deeper understanding of ways to develop ideas by better understanding the creative tools available. Examples of topics to be covered will include: entity-component vs. inheritance systems, singletons and Unity alternatives, and Scene workflows. Digital Artists will learn to integrate visual design programs such as Blender into the Unity platform as well.
Offering: **Host**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **NSM-IDEA**
Prereq: **None**

IDEA353 Robotics
Students will use hands-on projects, building and programming Arduino-based robots to learn about the field of robotics. Topics will include perception, locomotion, localization, common programming frameworks for robotics, and ethical considerations. Some background in electronics and mechanical construction may be helpful but is not required.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-MATH**
Identical With: **COMP353**
Prereq: **COMP211**

IDEA359 Space Design for Performance
In this course, students will study, construct, and deconstruct the performative space, whether in the theater or site-based, by analyzing the space as a context to be activated by the body of the performer and witnessed by an audience. Through practical assignments, the class will learn the aesthetic history of the theatrical event (considering plays, rituals, street parades, and digital performances, among others), while developing and discovering the student's own creative process (visual, kinetic, textual, etc.). Students will be guided through each step of the design process, including close reading, concept development, visual research, renderings or drawings, model making and drafting.

In this course, special emphasis is given to contemporary performance as a mode of understanding cultural processes as a relational system of engagement within our ecosystem, while looking at environmental and sustainable design, materials, and the environmental impacts of processing. Students will create and design performance spaces, while realizing scale models and drawings and integrating the notions of design and environmental principles and elements.

Students will have the opportunity to develop skills using 3D-drafting and 3D-modeling software.

This course counts towards the Theater Arts category for the THEA major.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-THEA**
Identical With: **THEA359, DANC359, ENVS359**
Prereq: **THEA105 OR THEA150 OR THEA185 OR ARST131 OR ARST190**

IDEA360 Media for Performance
This course examines the use of media and technology as it relates to dramaturgy and design for performance. Class time will be used for lecture, discussion, and experimentation, during which we will explore new technologies used in the industry, including projections, motion tracking, and software such as After Effects and Isadora. Throughout the semester, students will use the skills learned to create their own digital performances.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-THEA**
Identical With: **THEA360, DANC364**
Prereq: **None**

IDEA370 Beyond Product: Regenerative Design
This course builds on the exploration and knowledge learned in Product Design I to discover opportunities for systems thinking in design. Students will study challenges and opportunities related to aging, education, food, and mobility to investigate potential opportunities through the lens of regenerative design. The course will support students in developing digital modeling skills as well as rapid prototyping and fabrication techniques. Students will work both individually and collaboratively in a studio environment. Field trips to New York City design ateliers, fabricators, and workshops may be expected as part of this course.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST370**
Prereq: **ARST270 OR ARST235 OR ARST220**

IDEA375 Modeling the Earth and Environment
Models can provide insights into Earth systems that are difficult to obtain by direct experimentation or observation. This course will introduce students to the process of translating Earth systems into idealized mathematical models, specific methods for solving the resulting equations, and implementation of models in MATLAB. We will explore cases from a range of topics in the earth and environmental sciences to gain a better appreciation of the insights models can offer. Students should have MATLAB installed on a laptop computer for in-class work.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **NSM-EES**
Identical With: **E&ES375, E&ES575**
Prereq: **MATH120 OR MATH121**

IDEA383 Introduction to Costume Design for Performance
This course is an exploration of costume design concepts for contemporary performance including theater and other genres. The class will include beginning elements of costume design, including character/script analysis, research, costume lists, action charts, visual design concepts and techniques, and collage and drawing skills.

This course counts towards the Theater Arts category for the THEA major.
Offering: **Crosslisting**
Grading: **OPT**
Credits: **1.00**
Gen Ed Area: **HA-THEA**
Identical With: **THEA383**
Prereq: **THEA105 OR THEA185 OR ARST131 OR ARST445**

IDEA387 Virtual Production: The Music Video
This intensive studio course will explore the breadth and depth of the music video genre. Students will learn advanced post-production, motion capture, and video recording techniques. Class sessions will include technical demonstrations, group discussions, and conversations with practitioners in the field. Readings and screenings will examine the relationship between music videos, technology, contemporary art, and popular culture. Students will learn how to use the 3D motion capture studio and record live musical performances. Software will include Adobe AfterEffects, Blender, and DaVinci Resolve. Through weekly exercises and a final independent project, students will learn to work collaboratively and develop a distinct creative voice. The course will culminate with a final music video project, to be screened at the end of the semester. Previous experience in Adobe Premiere Pro software is required. Preference will be given to students who have successfully completed ARST 286, ARST 386, DDC 108, or DDC 448. All students must be concurrently enrolled in the virtual production lab which meets Fridays 1:20 p.m. - 3:20 p.m. in DDC.
Offering: **Crosslisting**
Grading: **A-F**
Credits: **1.00**
Gen Ed Area: **HA-ART**
Identical With: **ARST387, DDC387**
Prereq: **None**

IDEA401 Individual Tutorial, Undergraduate
Topic to be arranged in consultation with the tutor.
Offering: **Host**
Grading: **OPT**

IDEA402 Individual Tutorial, Undergraduate
Topic to be arranged in consultation with the tutor.
Offering: **Host**
Grading: **OPT**

IDEA409 Senior Thesis Tutorial
Topic to be arranged in consultation with the tutor.
Offering: **Host**
Grading: **A-F**

IDEA410 Senior Thesis Tutorial
Topic to be arranged in consultation with the tutor.
Offering: **Host**
Grading: **A-F**

IDEA411 Group Tutorial, Undergraduate
Topic to be arranged in consultation with the tutor.
Offering: **Host**
Grading: **OPT**

IDEA419 Student Forum
Student-run group tutorial, sponsored by a faculty member and approved by the chair of a department or program.
Offering: **Host**
Grading: **Cr/U**

IDEA420 Student Forum
Student-run group tutorial, sponsored by a faculty member and approved by the chair of a department or program.
Offering: **Host**
Grading: **Cr/U**

IDEA424 Advanced Research Seminar, Undergraduate
Advanced research tutorial, project to be arranged in consultation with the tutor.

Offering: **Host**
Grading: **OPT**

IDEA429 Senior Thesis Tutorial
Offering: **Host**
Grading: **OPT**

IDEA491 Teaching Apprentice Tutorial
The teaching apprentice program offers undergraduate students the opportunity to assist in teaching a faculty member's course for academic credit.
Offering: **Host**
Grading: **OPT**

IDEA492 Teaching Apprentice Tutorial
The teaching apprentice program offers undergraduate students the opportunity to assist in teaching a faculty member's course for academic credit.
Offering: **Host**
Grading: **OPT**