

# COLLEGE OF INTEGRATIVE SCIENCES

The College of Integrative Sciences (CIS) aims to equip students with the creative and quantitative skills needed to address current and emerging global challenges in science and technology. These challenges are multifaceted, requiring problem-solving approaches that integrate expertise from multiple perspectives.

The CIS promotes an interdisciplinary and integrative approach to scholarship and learning across mathematics and the life, physical, and behavioral sciences. By encouraging creative synergies among faculty and students of disparate disciplines, the CIS academic structure complements existing departments and has the flexibility to evolve with the needs of an ever-changing world.

Research is key to the CIS. With a faculty mentor, student researchers pursue inquiry-based learning that explores open questions and provides new perspectives. They develop the necessary problem-solving skills and build expertise at the frontiers of science. Through research, students are transformed from consumers into creators of knowledge.

Students interested in the CIS are advised to follow a course of study that emphasizes a core science background, achieved by pursuing a major in one of the departments or programs in natural science and mathematics (NSM). The linked major offered by the CIS combines the intellectual depth in one area (the major) with breadth achieved through courses and research in the linked major.

- Undergraduate College of Integrative Sciences Major (<https://catalog.wesleyan.edu/departments/cis/ugrd-cis/>)

Master of Arts in the College of Integrative Sciences (<https://catalog.wesleyan.edu/departments/cis/grad-cis-ma/>)

## CIS101 Success in STEM Seminar

This weekly seminar series will provide participants with tools and skills helpful in the pursuit of STEM studies, especially with introductory courses in STEM fields (biology, chemistry, physics, and mathematics). In particular, this seminar series is designed to facilitate the transition from high school academics to collegiate-level studies, and it is available only for first-year students.

Offering: **Host**  
Grading: **Cr/U**  
Credits: **0.25**  
Gen Ed Area: **NSM-CIS**  
Prereq: **None**

## CIS115 Experiential Design and Application

This course, co-taught with Director of Physical Plant Operations Mike Conte, will allow students to work directly with Facilities employees to design and execute modifications and repairs to existing Wesleyan spaces. The specific projects will change from semester to semester, but could include designing and building informal learning spaces, and planning and carrying out repairs and modifications to mechanical and plumbing systems. Students will learn design and engineering by carrying out projects to improve Wesleyan's facilities. Students must be willing to work with tools and machinery with supervision. The grading in this quarter-credit repeatable course will be based primarily on active participation, and the class meetings will be held on location and at times built around participants' schedules.

Offering: **Host**  
Grading: **Cr/U**  
Credits: **0.25**  
Gen Ed Area: **NSM-CIS**  
Prereq: **None**

## CIS121 Wesleyan Mathematics and Science Scholars Colloquium I

This weekly colloquium of participants in the Wesleyan Mathematics and Science Scholars (WesMaSS) Program will provide participants with a framework for taking full advantage of the educational opportunities in the natural sciences and mathematics available at Wesleyan. Class sessions and assignments are designed to help students to develop effective individual and group study skills, to promote cohort-building, and to navigate the "hidden curriculum" in higher education.

Offering: **Host**  
Grading: **Cr/U**  
Credits: **0.25**  
Gen Ed Area: **NSM-CIS**  
Prereq: **None**

## CIS122 Wesleyan Mathematics and Science Scholars Colloquium II

This weekly colloquium of participants in the Wesleyan Mathematics and Science Scholars (WesMaSS) Program will be focused on strategies for success in science and math higher education.

Offering: **Host**  
Grading: **Cr/U**  
Credits: **0.25**  
Gen Ed Area: **NSM-CIS**  
Prereq: **None**

## CIS135 Mindfulness

During this course, students will be introduced to various techniques of mindfulness practice and awareness, including sitting meditation and yoga. These modalities are designed to aid in stress and anxiety reduction and, when practiced diligently, may also offer opportunities for greater self-awareness and personal development. The goal is to give students not only a peer community but also a contemplative and metacognitive toolbox that is portable, replicable, and sustainable. Students will gain an understanding of the roles these practices can play in leading a happier, healthier, and more fulfilling life.

Offering: **Crosslisting**  
Grading: **Cr/U**  
Credits: **0.50**  
Gen Ed Area: **SBS-CIS**  
Identical With: **CSPL135**  
Prereq: **None**

## CIS135Z Introduction to Mindfulness

In this retreat-style, experiential course, students delve into a set of practices meant to cultivate self-awareness, alleviate the impact of the stress response, and move attention to the present moment. During this 10-day class on contemplative practices, students will be introduced to various individual and relational techniques developed to cultivate non-judgemental attention and self-awareness in the present moment, as well as metacognitive learning strategies.

Offering: **Crosslisting**  
Grading: **Cr/U**  
Credits: **0.50**  
Gen Ed Area: **SBS-CIS**  
Identical With: **CSPL135Z**  
Prereq: **None**

## CIS154 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, IDEA154**

Prereq: **None**

#### **CIS160 Life in the Oceans in the Anthropocene and Beyond**

Little is known about life in the deep sea, the largest habitat on Earth, even about the largest animals living there, such as the giant squid. Humans, however, are severely affecting even these most remote areas of our planet, and wildlife populations in the oceans have been badly damaged by human activity. We will look at the amazing diversity of ocean life and the disparate building plans of its animals, and see how oceanic ecosystems are fundamentally different from land ecosystems. Then we will explore how human actions are affecting oceanic ecosystems directly, for instance by overfishing (especially of large predators and filter feeders), addition of nutrients (eutrophication) and pollutants, and the spread of invasive species, as well as indirectly, through emission of carbon compounds into the atmosphere. Rising atmospheric CO<sub>2</sub> levels lead to ocean acidification and global warming, affecting the all-important metabolic rates of ocean life, as well as oceanic oxygen levels and stratification, thus productivity. We will try to predict the composition of future ecosystems by looking at ecosystem changes during periods of rapid warming in the geological past and see whether future ecosystems will become dominated by jellyfish, as they were 600 million years ago.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-EES**

Identical With: **E&ES160, BIOL160**

Prereq: **None**

#### **CIS170 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: **Crosslisting**

Grading: **Cr/U**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **IDEA170, PHYS170**

Prereq: **None**

#### **CIS170Z 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **IDEA170Z, PHYS170Z**

Prereq: **None**

#### **CIS173 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **IDEA173**

Prereq: **None**

#### **CIS175 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: **Crosslisting**

Grading: **Cr/U**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **IDEA175, PHYS206**

Prereq: **None**

#### **CIS185 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **HA-CIS**

Identical With: **IDEA185**

Prereq: **None**

#### **CIS185Z 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **IDEA185Z**

Prereq: **None**

#### **CIS210 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-IDEA**

Identical With: **IDEA210, PHYS210**

Prereq: **IDEA170 AND (PHYS111 OR PHYS113)**

#### **CIS221 Research Frontiers in the Sciences I**

This seminar is designed to introduce students to the exciting and cutting-edge research activity at Wesleyan across all the sciences and mathematics, and to introduce faculty with active research labs to students interested in working in a lab. The course showcases what research at the college level actually entails, and which projects Wesleyan faculty are actively researching. CIS 221 is scheduled in the fall, CIS 222 in the spring. Both are gateway classes to admission into the CIS, but also recommended to students broadly interested in the sciences who have not yet decided on a major. There is no overlap in speakers between CIS 221 and CIS 222, and students may take both.

Offering: **Host**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **NSM-CIS**

Prereq: **None**

#### **CIS222 Research Frontiers in the Sciences II**

This seminar is designed to introduce students to the exciting and cutting-edge research activity at Wesleyan across all the sciences and mathematics, and to introduce faculty with active research labs to students interested in working in a lab. The course showcases what research at the college level actually entails, and which projects Wesleyan faculty are actively researching. CIS 221 is scheduled in the fall, CIS 222 in the spring. Both are gateway classes to admission into the CIS, but also recommended to students broadly interested in the sciences who have not yet decided on a major. There is no overlap in speakers between CIS 221 and CIS 222, and students may take both.

Offering: **Host**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **NSM-CIS**

Prereq: **None**

#### **CIS239 Proseminar: Machine Learning Methods for Audio and Video Analysis**

In this course, students are introduced to machine learning techniques to analyze image, audio, and video data. The course is organized in three parts, and in each part we will first introduce how these nontraditional data can be converted into appropriate (mathematical) objects suitable for computer processing, and,

particularly, for the application of machine learning techniques. Students then will learn and work with a number of machine learning algorithms and deep learning methods that are effective for image and audio analysis. We will also explore major applications of these techniques such as object detection, face recognition, image classification, audio classification, speaker detection, and speech recognition.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-QAC**

Identical With: **QAC239**

Prereq: **COMP112 OR QAC155 OR QAC156**

#### **CIS241 Introduction to Network Analysis**

This is an interdisciplinary hands-on course examining the application of network analysis in various fields. It will introduce students to the formalism of networks, software for network analysis, and applications from a range of disciplines (history, sociology, public health, business, political science). We will review the main concepts in network analysis and learn how to use the software (e.g., network analysis and GIS libraries in R) and will work through practice problems involving data from several sources (Twitter, Facebook, airlines, medical innovation, historical data). Upon completion of the course, students will be able to conduct independent research in their fields using network analysis tools.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **SBS-QAC**

Identical With: **QAC241**

Prereq: **None**

#### **CIS251 Data Visualization: An Introduction**

This course will introduce students to the principles and tools necessary to present quantitative information in a visual way. While tables and graphs are widely used in our daily lives, it takes skill to deconstruct what story is being told. It also takes a perceptive eye to know when information is being misrepresented with particular graphics. The main goals of the course are for students to learn how to present information efficiently and accurately so that we enhance our understanding of complex quantitative information and to become proficient with data visualization tools. Beginning with basic graphing tools, we will work our way up to constructing map visualizations and interactive graphs. This course will require a substantial amount of computation in R. No prior programming experience is necessary, but learning does require willingness and time.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-QAC, SBS-QAC**

Identical With: **QAC251**

Prereq: **None**

#### **CIS251Z Data Visualization: An Introduction**

This course will introduce students to the principles and tools necessary to present quantitative information in a visual way. While tables and graphs are widely used in our daily lives, it takes skill to deconstruct what story is being told. It also takes a perceptive eye to know when information is being misrepresented with particular graphics. The main goals of the course are for students to learn how to present information efficiently and accurately so that we enhance our understanding of complex quantitative information, and to become proficient with data visualization tools. Beginning with basic graphing tools, we will work our way up to constructing map visualizations and interactive graphs. This course will require a substantial amount of computation in R. No prior programming experience is necessary, but learning does require willingness and time.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-QAC, SBS-QAC**

Identical With: **QAC251Z**

Prereq: **None**

#### **CIS263 Demystifying Data: Introductory Data Analysis and Modeling**

How do scientists make sense of the data they collect, especially as datasets grow in size and complexity? In this course, students will learn fundamental concepts in data collection, statistics, and modeling through hands-on analysis of publicly available datasets from the COVID-19 pandemic. We will cover the effects of biases in data collection, models of epidemic growth and spread, and the principles of studying a rapidly evolving pathogen. While we will use motivating examples from the life sciences, students can expect to learn techniques and ways of thinking that will form a foundation for evaluating and analyzing data across scientific disciplines. Students will learn the basics of using the R programming language to visualize, analyze, and model data, so no previous programming experience is expected.

Offering: **Host**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL263**

Prereq: **MB&B181 OR BIOL182**

#### **CIS265 Bioinformatics Programming**

This course is an introduction to bioinformatics and programming for students with interest in the life sciences. It introduces problem areas and conceptual frameworks in bioinformatics. The course assumes little or no prior programming experience and will introduce the fundamental concepts and mechanisms of computer programs and examples (e.g., sequence matching and manipulation, database access, output parsing, dynamic programming) frequently encountered in the field of bioinformatics.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL265, MB&B265, COMP113**

Prereq: **[MB&B181 or BIOL181]**

#### **CIS266 Bioinformatics**

This course is an introduction to bioinformatics for students with interest in the life sciences. The course is similar to BIOL265 but only meets in the second half of the semester (with BIOL265) and is designed for students with programming background, ideally in Python. The course introduces problem areas and conceptual frameworks in bioinformatics and discusses programming approaches used in bioinformatics such as sequence matching and manipulation algorithms using dynamic programming, clustering analysis of gene expression data, analysis of genetic nets using Object Oriented Programming, and sequence analysis using Hidden Markov Models, Regular Expressions, and information theory.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **0.50**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL266, COMP266, MB&B266**

Prereq: **[MB&B181 OR BIOL181]**

#### **CIS270 Systems Biology with Programming**

Systems--collections of entities that interact to form an interconnected whole--are present at every scale of organization in the life sciences. Biologists can take advantage of computational and mathematical tools to understand how these systems function and predict how they might change over time. This approach is critical in applications ranging from epidemic modeling to evolutionary theory. In this course, students will learn how simple rules and interactions can lead to

complex behavior using examples from three main areas: regulatory networks, population genetics, and ecology. Students will spend the first part of the course learning how to program in Python in order to model, simulate, and visualize these systems. No previous programming experience is expected.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL270**

Prereq: **BIOL181 OR BIOL181Z AND BIOL182 OR BIOL182Z**

#### **CIS271 Systems Biology with Programming**

This course is similar to BIOL270, but only meets in the second half of the semester with BIOL270 and is designed for students with a solid background in programming in Python. Systems--collections of entities that interact to form an interconnected whole--are present at every scale of organization in the life sciences. Biologists can take advantage of computational and mathematical tools to understand how these systems function and predict how they might change over time. This approach is critical in applications ranging from epidemic modeling to evolutionary theory. In this course, students will learn how simple rules and interactions can lead to complex behavior using examples from three main areas: regulatory networks, population genetics, and ecology.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **0.50**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL271**

Prereq: **BIOL181 OR BIOL181Z AND BIOL182 OR BIOL182Z**

#### **CIS284 Data, Art, and Visual Communication**

This course looks at the ways the digital arts--broadly defined--can be used to explore the intersections of research, data, design, and art. Following a creative software "bootcamp," students will execute projects intended to help them generate, manipulate, and remix data for the purposes of visual communication and art. Students will use Adobe Creative Suite and Processing, an open source programming language, and integrated development environment (IDE) built for electronic arts, new media, and visual design. In addition to working in the studio, seminars, readings, and student presentations will explore the role of data visualization, "big data," and the web in culture and society today. No prior software knowledge or coding skills are required. Students working in STEM, humanities, and social sciences are encouraged to enroll.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **HA-ART**

Identical With: **ARST484**

Prereq: **None**

#### **CIS285 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: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **HA-CIS**

Identical With: **IDEA285**

Prereq: **None**

### **CIS307 Experimental Design and Causal Inference**

The course provides the foundations and statistical thinking to design, collect, and analyze experimental data and introduces appropriate techniques for observational data when causal inference is the objective of the analysis. Throughout the course, we introduce and compare various experimental designs. We will discuss sample size and power calculations as well as the advantages and disadvantages of each of these designs. With observational data, we will explore difference-in-difference models, propensity score matching techniques, regression discontinuity designs. This course gives students the opportunity to develop further their computational skills as we learn how to describe, interpret, control, and draw inferences from experimental and observational data.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-QAC, SBS-QAC**

Identical With: **QAC307**

Prereq: **QAC201 OR PSYC200 OR MATH132 OR ECON300**

### **CIS310 Genomics Analysis**

This course is an introduction to genomics and analysis for students with interest in life sciences. It introduces current applications of genomics techniques, covers how to build a genomics workflow, and introduces statistical analyses in R programming language. This course assumes little or no prior programming experience and will provide hands-on experience in taking raw next-generation sequencing data through a custom workflow and ending with analyses in R statistical software. This course emphasizes hands-on computational methodology, bioinformatics data analysis, and interpretation of quantitative information. The primary method of evaluation is through written work and weekly homework assignments and the course will increase students skill in scientific writing and scholarship. Classes will consist of lectures, discussion groups and cloud based computational projects designed to train transferable skills in big data analysis. Lectures, labs, assignments and assessments will promote deep knowledge in genomics and informatics, gaining understanding in the scientific process, thinking analytically and critically about biological questions, and formulating original ideas and testing them with big data. Skills gained during the course will include quantitative, statistical and graphical tools, scientific writing, oral communication and deep thinking about ethics in a genomics-enabled world.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL310, MB&B311**

Prereq: **MB&B181 OR BIOL181 OR BIOL181Z**

### **CIS320 Advanced Academic Writing**

This course is designed to help students master the skills needed for thesis-level academic writing. The course uses an example-driven approach emphasizing an iterative revision process, with an emphasis on expository writing skills appropriate for publishable literature. Students will be encouraged to focus on their own independent research work as subject matter of writing exercises.

Offering: **Crosslisting**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **CIS520**

Prereq: **None**

### **CIS321 Special Topics in Integrative Sciences**

This is a special topics course open to all Wesleyan students to explore subjects that are at the boundaries of the canonical scientific disciplines, that are complex, and that have paramount societal impact (e.g., pandemics and

public health, climate change, the search for life in the universe, and artificial intelligence and automation). There are also societal issues that deeply impact and are vital for all the sciences (e.g., diversity, equity and inclusion of our communities, federal funding, and science policy). We will collectively identify one or two topics that we would like to focus on together as a class. With disciplinary humility, we will construct a syllabus that will include readings, classroom discussions, presentations, guest lectures, and writing that will integrate our knowledge, methodologies, and action across the sciences. This course is part of the CIS major, and it is expected that all senior CIS majors will be enrolled.

Offering: **Host**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **NSM-CIS**

Prereq: **None**

### **CIS322 Senior Colloquium in Integrative Sciences**

This is a special colloquium course focused on skills associated with science communication and, in particular, communicating student's own research to various audiences. Given the broad benefits that research has on society, and the federal funding derived from tax-payer dollars, scientists have an ethical obligation to communicate the results of their work to various stakeholders. In addition, scientists find that communicating and discussing their work with others is an invaluable method of idea generation. Finally, sharing our work with others is fun and gratifying, particularly at the end of a large project (e.g., a thesis)! These skills transcend our particular departments and are common across STEM fields. With disciplinary humility, we will engage in skill-building using various resources available to us on campus. There will be an opportunity for students to identify skill sets that they are particularly interested in, so that they can be incorporated into the course. There will be readings, classroom discussions, presentations, guest lectures, and visits to centers on campus. This course is part of the CIS major, and it is expected that all senior CIS majors will be enrolled.

Offering: **Host**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **NSM-CIS**

Prereq: **None**

### **CIS323 Bayesian Data Analysis: A Primer**

This course introduces the applied principles of Bayesian statistical analysis. The Bayesian paradigm is particularly appealing in research where prior research and historical data are available on parameters of interest. This course will teach students appropriate techniques for analyzing data of this nature as well as broaden computational skills in R. The course will lay the foundation for Bayesian data analysis that students can use to further develop skills in decision making.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **0.50**

Gen Ed Area: **NSM-QAC, SBS-QAC**

Identical With: **QAC323**

Prereq: **MATH132 OR ECON300 OR GOVT367**

### **CIS327 Evolutionary and Ecological Bioinformatics**

Bioinformatic analysis of gene sequences and gene expression patterns has added enormously to our understanding of ecology and evolution. For example, through bioinformatic analysis of gene sequences, we can now reconstruct the evolutionary history of physiology, even though no traces of physiology exist in the fossil record. We can determine the adaptive history of one gene and all the gene's descendants. We can now construct the evolutionary tree of all of life. Bioinformatics is particularly promising for analysis of the ecology and biodiversity of microbial communities, since well over 99 percent of microorganisms cannot be cultured; our only knowledge of these organisms is through analysis of their gene sequences and gene expression patterns. For

example, even when we cannot culture most of a microbial community, we can determine which metabolic pathways are of greatest significance through analysis of community-level gene expression. All these research programs are made accessible not only by breakthroughs in molecular technology but also by innovation in the design of computer algorithms. This course, team-taught by an evolutionary biologist and a computer scientist, will present how bioinformatics is revolutionizing evolutionary and ecological investigation and will present the design and construction of bioinformatic computer algorithms underlying the revolution in biology. Students will learn algorithms for reconstructing phylogeny, for sequence alignment, and for analysis of genomes, and students will have an opportunity to create their own algorithms.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-BIOL**

Identical With: **BIOL327, COMP327, BIOL527, COMP527**

Prereq: **[BIOL182 or MB&B182] OR [BIOL196 or MBB196] OR COMP112 OR COMP211**

#### **CIS331 Video Games as/and the Moving Image: Art, Aesthetics, and Design**

Video games are a mess. As a relatively new medium available on a range of platforms and in contexts ranging from the living room to the line for the bathroom, video games make new but confusing contributions to the meaning and possibilities of the moving image. We will work to understand what games are, what they can do, and how successful games do what they do best. Students will complete game design exercises, create rapid prototypes, playtest their games, and iteratively improve their games with play and their players in mind. They will complete analyses of games and game design projects both alone and in groups and participate in studio-style critiques of one another's work. Experience with computer programming is helpful but not essential.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **HA-FILM**

Identical With: **FILM331**

Prereq: **None**

#### **CIS340 STEM Equity and Inclusion**

This course is open to all students at Wesleyan interested in learning about equity and inclusion in STEM. A weekly seminar will provide an overview of topics related to STEM equity, including the demographics of STEM fields, relevant sociology/psychology research (implicit bias, stereotype threat, impostor syndrome, mindset, etc.), ethics, social justice, and best practices for inclusive departments and programs. Students will be required to develop and evaluate proposals for activities to increase STEM equity and inclusion at Wesleyan, using the information provided during the seminar component of the course.

Offering: **Host**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **None**

Identical With: **CIS540**

Prereq: **None**

#### **CIS350 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: **Crosslisting**

Grading: **A-F**

Credits: **2.00**

Gen Ed Area: **NSM-IDEA**

Identical With: **IDEA350, FILM250, COMP350**

Prereq: **None**

#### **CIS375 Mass Extinctions in the Oceans: Animal Origins to Anthropocene**

Geoscientists are debating whether we are living in the Anthropocene, defined as a period during which humans are having a significant effect on atmospheric, geologic, hydrologic, and biospheric earth system processes. There is considerable discussion whether we are indeed affecting the biosphere to such an extent that life on Earth will suffer an extinction similar in magnitude to those that have occurred during earth history. Studies of the fossil record provide unique evidence that is used to evaluate the large extinctions of the past and compare them to ongoing extinction processes, extinctions rates and patterns, and magnitude. Organisms with hard skeletons are most easily and most abundantly preserved in the rock record. Many of these are invertebrates that lived in the oceans (e.g., clams, sea urchins, corals). In the first part of this course, students will become familiar with the nature of the fossil record, the most common marine animals in the fossil record, and their evolution and diversification. Lectures will be combined with studying fossils. In the second part of the course, possible causes for mass extinction will be considered, together with their specific effects on environments and biota, and these predicted effects will be compared to what has been observed. Potential causes include asteroid and comet impacts, large volcanic eruptions, "hypercanes," and "methane ocean eruptions," and more exotic processes. Students will present in class on these topics, and we will compare rates and magnitude of environmental change with severity and patterns of extinction.

Offering: **Crosslisting**

Grading: **A-F**

Credits: **1.00**

Gen Ed Area: **NSM-EES**

Identical With: **E&ES376**

Prereq: **E&ES101 OR E&ES115 OR ASTR155 OR MB&B181**

#### **CIS400 Professional Development and Graduate School Preparation Seminar**

The objectives of this course are (1) to build a supportive cohort that will help students sustain their goals when they enter graduate school and (2) to provide students with skills they will need to succeed in graduate school. Students will work on writing, presentation, and discussion skills. This will be done by reading classic books on writing, critiquing the ability of different figures and graphs to convey information, reading and discussing scientific papers, and giving research presentations.

Offering: **Host**

Grading: **A-F**

Credits: **0.50**

Gen Ed Area: **NSM-EES**

Prereq: **None**

#### **CIS401 Individual Tutorial, Undergraduate**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

#### **CIS402 Individual Tutorial, Undergraduate**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

#### **CIS408 Senior Tutorial (downgraded thesis)**

Downgraded Senior Thesis Tutorial - Project to be arranged in consultation with the tutor. Only enrolled in through the Honors Coordinator.

Offering: **Host**

Grading: **A-F**

**CIS409 Senior Thesis Tutorial**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS410 Senior Thesis Tutorial**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS411 Group Tutorial, Undergraduate**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS412 Group Tutorial, Undergraduate**

Topic to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS419 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**

**CIS420 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**

**CIS423 Advanced Research Seminar, Undergraduate**

Advanced research tutorial; project to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS424 Advanced Research Seminar, Undergraduate**

Advanced research tutorial; project to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS465 Education in the Field, Undergraduate**

Students must consult with the department and class dean in advance of undertaking education in the field for approval of the nature of the responsibilities and method of evaluation.

Offering: **Host**

Grading: **A-F**

**CIS492 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**

**CIS520 Advanced Academic Writing**

This course is designed to help students master the skills needed for thesis-level academic writing. The course uses an example-driven approach emphasizing an iterative revision process, with an emphasis on expository writing skills appropriate for publishable literature. Students will be encouraged to focus on their own independent research work as subject matter of writing exercises.

Offering: **Host**

Grading: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-CIS**

Identical With: **CIS320**

Prereq: **None**

**CIS540 STEM Equity and Inclusion**

This course is open to all students at Wesleyan interested in learning about equity and inclusion in STEM. A weekly seminar will provide an overview of topics related to STEM equity, including the demographics of STEM fields, relevant sociology/psychology research (implicit bias, stereotype threat, impostor syndrome, mindset, etc.), ethics, social justice, and best practices for inclusive departments and programs. Students will be required to develop and evaluate proposals for activities to increase STEM equity and inclusion at Wesleyan, using the information provided during the seminar component of the course.

Offering: **Crosslisting**

Grading: **Cr/U**

Credits: **0.50**

Gen Ed Area: **None**

Identical With: **CIS340**

Prereq: **None**

**CIS549 Advanced Research Seminar, Graduate**

Advanced research tutorial; project to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**CIS550 Advanced Research Seminar, Graduate**

Advanced research tutorial; project to be arranged in consultation with the tutor.

Offering: **Host**

Grading: **OPT**

**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: **PHYS170, CIS170**

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. This course presents

a loose chronology of fashion, from the twentieth 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. 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 cultural object, 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, ENV5203, 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, ENV5207**

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**

**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: **OPT**

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: **OPT**

Credits: **1.00**

Gen Ed Area: **NSM-IDEA**

Prereq: **None**

#### **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: **OPT**

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, ENV227**

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**

#### **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 as 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 instructor will draw on her own experiences as an activist for women's rights, queer rights, and economic justice. In addition, the course will feature a guest teacher for a segment of the semester: Beverly Tillery, Executive Director of the Anti-Violence project in NYC will look at 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 discuss events that may occur in real time over the course of the semester. This course will be relevant to students interested in public policy, feminism, 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**

#### **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 course, we will develop an understanding of soft materials and how softness is explored in design. We will explore the notion of softness in design with particular focus on how soft, biodegradable materials can form our experience of a product. We will study how soft materials, plants, and living organisms can be utilized as a living material to form a built ecology. In particular, we will learn how mycelium used in novel ways can produce experiential affect in spaces, especially in relation to the human body. We will study how to design for impermanence--sometimes using waste materials--and develop an understanding for material recovery. The goal of the course is to introduce students to bio and living materials used in design as well as zero-waste design methodology, and develop digital and physical skills associated with the making of soft products. Students will work both individually and collaboratively in a studio environment. Field trips to New York City museums, fabricators, and galleries 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**

#### **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**

#### **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, ENV5291**

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: **OPT**

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.

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: **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, ENV308**

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, ENV333**

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, ENV321**

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: **1.00**

Gen Ed Area: **HA-ART**

Identical With: **ARST321, ENV324**

Prereq: **ARST270 OR ARST235 OR ARST220**

**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**

**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, ENV3359**  
 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 Regenerative Design**

This course builds on the exploration and knowledge learned in Product Design I to discover opportunities for systems thinking in product design. Students will study systemic challenges related to aging, education, food, and mobility to investigate potential opportunities through the lens of product 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**

#### **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**

#### **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**

**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**