

VISUAL ARTS

<http://krieger.jhu.edu/visualarts/>

The Center for Visual Arts (CVA) engages students in innovative thinking and creative problem-solving applicable across disciplines. By challenging students to develop unique perspectives and approaches to the study and practice of the visual arts, the CVA encourages students to take risks and push the boundaries of traditional art forms. The Center's commitment to fostering a culture of interdisciplinary research and collaboration ensures that students have the skills and knowledge necessary to excel in their chosen fields.

Visual arts courses examine contemporary and historical perspectives in art while providing an inclusive environment where ideas are shared and acted upon.

Central to this mission of challenging students and advancing their knowledge and skills in the arts are classes that offer faculty-led cross-disciplinary collaboration within diverse academic programs at JHU and the greater Baltimore community. CVA faculty are accomplished artists, photographers, designers, and illustrators.

Students can minor in art or take general elective classes from a diverse curriculum that includes drawing, painting, printmaking, digital photography, visual communication, fiber art, and a range of special topics courses. Through Johns Hopkins' cooperative programs with MICA (Maryland Institute College of Art) and other colleges in the Baltimore area, students can take courses not offered at the Center for Visual Arts.

The CVA hosts an annual fall faculty show to highlight the creative work of current faculty.

Each spring, the Johns Hopkins community is invited to attend an exhibition of the year's best work by CVA students. Additionally, a variety of temporary exhibits are hosted in the department throughout the year.

The CVA invites award-winning artists to campus every semester to work with students and give a public presentation about their art practice. News and events can be found on the CVA's social media pages:

Facebook (<https://www.facebook.com/jhuvisualarts/>)

Instagram (https://www.instagram.com/accounts/login/?next=https%3A%2F%2Fwww.instagram.com%2Fjhuvisualarts%2F&is_from_rle)

Programs

- Visual Arts, Minor (<https://e-catalogue.jhu.edu/arts-sciences/full-time-residential-programs/degree-programs/art-workshops/visual-arts-minor/>)

For current course information and registration go to <https://sis.jhu.edu/classes/>

Courses

AS.371.126. Fiber Art and the String Revolution. 3 Credits.

This course presents students with a technical, historical, and cultural understanding of the fiber medium. Students learn the basics of textile processes, including dyeing, knitting, weaving, sewing, and lacemaking. Technical demonstrations and samples will be covered in class while students are encouraged to expand upon covered material through long-term personal projects. Technical demonstrations will be supported with slide lectures demonstrating the historical context of fiber processes and their contemporary applications. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.130. Smartphone Photography. 3 Credits.

This course will explore creative approaches for making visually compelling photographs using smartphone technology. Through photography assignments, demonstrations, and field trips, we will experiment with many photography apps that can be used for manual camera exposure, image adjustments, digital collaging, making artist zines, creating AI-generated images, and other creative techniques. Conceptual-based projects will offer students the opportunity to think beyond the smartphone cameras as just an apparatus for documenting everyday life. We will also utilize Fuji and Canon smartphone printers to make inkjet and Polaroid prints of our project images. Classroom discussions and readings will cover topics like the ethical responsibilities of using smartphones in public spaces and how the history of technology has shaped our understanding of art, culture, and everyday life. Attendance for the first class is mandatory.

Prerequisite(s): Students who have taken AS.371.137 are not eligible to take AS.371.130.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.131. Foundation Drawing. 3 Credits.

This three-credit studio course is an introduction to the tools, techniques, and concepts of basic drawing. Studio projects will focus on building strong observation and rendering skills while experimenting with traditional and contemporary practices in drawing. The course will provide insight into understanding a "drawing" as a visual perception and as a concept. Some drawing projects will take place outside of the classroom exploring hidden gems around Baltimore including the Graffiti Alley, Walters Art Museum, John Hopkins Archeological Museum, Greenmount Cemetery, Baltimore Museum of Art, and more. No previous experience is required for this course. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.133. Oil Painting I. 3 Credits.

This course is designed as an introduction to the tools, techniques, and concepts of basic painting for the serious student. Studio assignments focus on developing strong observation and rendering skills focusing on issues of light, color, and composition while experimenting with traditional and contemporary practices in painting. Lectures and a museum trip give students an art historical context in which to place their own discoveries as beginning painters. Oil paint will be used. No previous experience is necessary. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.137. Smartphone Photography Online. 3 Credits.

In this course, students will explore creative techniques for making visually compelling photographs using their smartphone camera. Through photography assignments, demonstrations, and virtual collaborations, we will experiment with many photography apps that can be used for manual camera exposure, image adjustments, digital collaging, and other visual effects. We will learn about the history of social media and use some of the current platforms to submit our course projects. We will also discuss the ethical responsibilities of using smartphones in public spaces and how the history of technology has shaped our understanding of art, culture, and everyday life. This course is an online version of AS.371.130. Attendance for the first class is mandatory.

Prerequisite(s): Students who have taken AS.371.130 are not eligible for AS.371.137.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.152. Digital Photography I. 3 Credits.

In this introductory photography course, we will learn the fundamental techniques of image-making using digital camera technology and editing software. Emphasis will be placed on DSLR/Mirrorless camera functions as both a means of proper image exposure and creative effect. We will also explore the traditional rules of photographic composition and contemporary image design. Adobe software will be utilized for organizing, editing, adjusting, and manipulating our images to make beautifully crafted files and inkjet prints. Throughout the semester, we will engage in classroom critiques, field trips, readings, and discussions, to expand our photographic vocabulary. In this course, creative exploration will be fostered through the visual language of photography. DSLR cameras are available on loan for the semester. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.153. Introduction to Visual Communication- Graphic Design. 3 Credits.

The digital design course explores two-dimensional graphics as visual communication. Students will be introduced to basic design principles and elements, learn graphics tools used in the design industry, and develop and apply creative strategies to solve design problems in their everyday lives. This unique course will address the students' direct needs through real-life design problems they face. Students will be asked to bring design challenges and tackle the issue both independently and collaboratively. Design challenges may include building print and web visual presentations, producing information brochures and posters, developing off and online portfolios, and creating resumes for business cards. The course will offer analog and digital design processes, graphics software tutorials and techniques, and a basic introduction to design history, vocabulary, and concepts. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.154. Introduction to Watercolor. 3 Credits.

This course provides experience and instruction in observational and expressive watercolor techniques, materials, concepts, and vocabulary. Topics to be reviewed include line, perspective, value, texture, composition, color, and pictorial space. There will be an introduction to contemporary practices in watercolor, as well as experimental and abstract exercises, collage, and conceptual work. Attendance for the first class is mandatory.

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.184. Introduction to Silk Screen Printing. 3 Credits.

This course is an overview of hand-drawn and digital methods for silk screen printing. Through demonstrations and self-guided projects, students will develop their compositional skills while creating images based on narrative, self-reflection, and intercultural connectivity. This course will introduce students to various technical skills required for producing prints such as film/screen preparation, image registration, and printing techniques on different materials. In addition to this, students will learn the history of printing, and how both analog and digital processes can be used to create and inform a printed image. At the end of the course, students will get the opportunity to produce their own edition of prints. No prior experience is necessary to enroll in this course. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.185. Printmaking: Multiples and Variations. 3 Credits.

In this course, students learn to create marks, textures, and imagery using various printmaking techniques. In this class, students will learn how to create relief and intaglio printing matrices. They will also practice printing by hand and with a press to reproduce their images. Towards the end of the course, students will explore layered printing, monoprinting, and mixed media approaches to create unique 2-dimensional and 3-dimensional works. No prior experience is necessary to enroll in this course. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

AS.371.211. Artist Books: Draft, Print, Stitch. 3 Credits.

In this studio art class students will create three artist books taught by three different CVA faculty. The first four weeks will investigate the book as a technological and cultural artifact, exploring historically what the book is and does, and as a cognitive aid and engine for ideation. Students will create a blank book that they use for their creative explorations.

The second section will use printmaking techniques such as paper lithography, xerox transfers, and relief printmaking combined with quick and ephemeral folding structures to understand both printmaking and bookmaking's rich history in the dissemination of ideas, democracy, and social change. This section will participate in a class zine exchange.

The third section of the course will explore embroidery and weaving to navigate language and mark-making. Students will explore the relationship between poetry, storytelling, and fiber processes to create a narrative textile. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.212. UX Design Fundamentals. 3 Credits.

In this course students will learn how the experiences and interactions we have every day are shaped and mediated by the way products and interfaces are designed. We will look at how designers develop products that engage, delight, motivate, or manage users. Students will consider the ethics of design and learn to spot manipulative or misleading design patterns. Fundamentally, we will learn what makes a product usable. This course will empower students to understand common interface design terminology, think through how design works or doesn't, and allow students to be conversant with designers when developing a product or project. During the course, we will look at fundamental principles of good design, discuss current trends in product and interface design, and become familiar with the industry standard UX design software. Finally, we will create a basic product prototype that will allow students to present and test a product or interaction idea.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.216. From the still life to the figurative: Photographic Lighting Techniques. 3 Credits.

In this course, we will learn photographic lighting techniques used in both contemporary art and commercial photography. We will explore how design, composition, location, and use of light and color all play integral roles in our photographic images. Projects in this course will explore the boundaries of both representation and abstraction, by working with such themes as portraiture, still life, product, environmental, and location photography. We will gain technical proficiency with studio lighting equipment, including strobe lights, continuous LED lights, clamp lights, on-camera flash, light stands, backdrops, color gels, and other lighting accessories. Demonstrations in Adobe software will provide us with the technical skills to organize, edit, and adjust our photographs to make beautifully crafted inkjet prints. DSLR cameras are available on loan for the semester. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.217. Film Photography in the Digital World. 3 Credits.

In this photography course, we will learn how to use traditional 35mm film cameras for photographing with both color and black & white film stock. The film shot in this course will be outsourced to a professional photography lab, to both develop our film and provide us with high-resolution digital scans. Demonstrations in Adobe software will provide us with the technical skills to organize, edit, and adjust our scans to make beautifully crafted inkjet prints. Various paper surfaces will be explored to show how substrate choices emphasize the textural qualities, tonal range, and color pallet that film offers. We will study a wide range of topics in photography, such as culture, identity, family, politics, environmentalism, history, and other themes in art. We will also learn about the invention of photography and how the technical evolution of the camera advanced the medium into new realms. 35mm film cameras are available on loan for the semester. Please note that this is not a traditional darkroom course, therefore, there will be no hand development of film or traditional darkroom printing. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.218. Documentary Photography: The Stories We Tell. 3 Credits.

As the historical core of the photographic medium, documentary photography spans a broad range of expressions. This includes its earliest role in scientific and medical advancements, landscape surveys, journalism, war reportage, social action, personal storytelling, and conceptual mythmaking. Within these modes of image-making, photography inspires conversation about truthful witness vs. aesthetic commentary. In this course, students have the option to photograph with digital technology, including, but not limited to DSLR, Mirrorless, Point-and-Shoot, and Smartphone Cameras. We will use Adobe software for file management, image editing, sequencing, and inkjet printing. Course projects, readings, lectures, critiques, and field trips in Baltimore are designed to expand our image-making vocabulary and refine individual photographic styles. DSLR cameras are available on loan for the semester. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4), Projects and Methods (FA6)

AS.371.219. Experimental Photography: Light-Sensitive & Hands-on Processes. 3 Credits.

In this non-traditional photography course, we will employ historic and contemporary photographic processes as a means of creative investigation. We will explore such techniques as Cyanotypes, Lumens, Anthotypes, Pinhole Photography, Image Collaging, Digital Negatives, Polaroid Emulsion Lifts & Alterations, and uses of Vernacular Photography. We will learn how these processes played an integral role in the invention of photography and how they have been recontextualized from the mid-19th century to now. A variety of substrate choices will be utilized for creating our images, such as light-sensitive darkroom paper, watercolor paper, Polaroid, newsprint, fabric, and other unconventional surfaces. Emphasis will be placed on the material nature of photography and how the medium can be pushed beyond its limitations. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.226. Sculptural Fibers. 3 Credits.

The fabric of the universe, a wrinkle in time and space: our physical universe is frequently described through fiber metaphors. Fiber processes are algorithmic. They grow exponentially, they fold, they tear, they wrinkle. These processes function as a pliable plane that can be bent, stretched, and turned inside out. This course offers students an opportunity to explore fiber processes through this sculptural lens. Topics include knitting, crochet, basketry, and installation as they come together to form sculptural armatures and objects. Together we will explore the physical properties of fiber and textiles, and how they take up space and function in our world. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.234. Oil Painting II. 3 Credits.

In this intermediate painting course, students build on the concepts and skills developed in Oil Painting I while furthering their understanding of painting tools, techniques, and image-making. Course content will include the study of traditional and contemporary uses of color, glazing techniques, painting mediums, stretching and priming a canvas, alternative painting surfaces, and painting imagery. Structured assignments on thematic motifs such as still life, cityscapes, light, color, collage, and composition will aid students in developing their style and point of view in painting. The semester will end with students creating a series of paintings on their choice of subject. Developing a deeper understanding of the history of painting; past and present and applying that in research and peer review will be stressed. Attendance for the first class is mandatory.

Prerequisite(s): AS.371.133 or instructor's permission.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.236. Drawing: The Portrait. 3 Credits.

An intensive look at the traditions and techniques of portrait drawing. Students will work from live models in a variety of media and study master portraits by Holbein, Rembrandt, Ingres, Degas, etc. Class trips to the Baltimore Museum of Art Print & Drawing Room and JHU Archaeological Museum will enhance knowledge and appreciation of the history and traditions of portraiture. Attendance for the first class is mandatory.

Prerequisite(s): AS.371.131

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.238. Portrait and Figure Painting. 3 Credits.

This intermediate painting course, Portrait and Figure Painting, is designed to provide students with a comprehensive understanding of the art and techniques of figurative and portrait painting from the model. Students will delve into aspects of human anatomy, color theory, and painting techniques, using a variety of painting mediums such as oil, acrylic, and watercolor. The course will also focus on the development of personal style and the ability to capture likeness and facial expressions. Taught by a renowned Baltimore mural and portrait painter, Ernest Shaw. Attendance in first class is mandatory.

Prerequisite(s): AS.371.133 OR AS.371.234

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.240. Digital Photography II. 3 Credits.

In this intermediate photography course, we will continue the aesthetic and technical development of digital image-making. Conceptual and creative exploration will be fostered using advanced DSLR/Mirrorless digital capture, creative lighting techniques, image construction and manipulation using Adobe software, inkjet substrate choices, and forms of digital output. We will have an in-depth look at contemporary photography as it relates to culture, historical practices, current art trends, and classroom assignments. Students will also participate in readings, discussions, field trips, and classroom critiques to expand on their photographic vocabulary and understanding of contemporary art. DSLR or Mirrorless cameras are available on loan for the semester. Attendance for the first class is mandatory.

Prerequisite(s): AS.371.151 or AS.371.303 or AS.371.216 or AS.371.218 or AS.371.152

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.250. Life Drawing. 3 Credits.

An intermediate drawing course focusing on drawing the human form and studying anatomy for artists. Working from live models, students will draw clothed and nude figures, portrait drawings, gesture drawings, and anatomy tracings of the skeleton and muscles. Students will use drawing skills learned in "Drawing I" to explore the human form using wet and dry material, collage, and color. The class will study figure drawings and paintings from Renaissance to contemporary artists. Attendance for the first class is mandatory.

Prerequisite(s): AS.371.131 or AS.371.187 or permission of Instructor.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.289. Collage & Assemblage: 2D and 3D Art Practices. 3 Credits.

In this course, students will research, investigate, and build art utilizing traditional and non-traditional processes and materials. Students will have the opportunity to expand their knowledge of basic art-building materials, including, but not limited to found objects, photographs, basic electronics, and consumables. Projects may include assemblages, light 3-D structures, collages, wearables, and hard and soft sculptures. Exploration of materiality as form and content through the lens of contemporary art practices and theory will serve as a reference and a guide for students. Students are encouraged to imagine all possibilities for a structure. Students will provide the materials for this class. Attendance for the first class is mandatory. Recommended but not required: one studio art course.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.290. Introduction to Jewelry and Small Metals. 3 Credits.

This course will provide students with the basic skills needed to design and fabricate their own jewelry and/or small sculptures. Offered at the Baltimore Jewelry Center, a metal + jewelry makers-space in Baltimore City, this course will cover piercing, filing, finishing, fabricating, soldering, forming, basic stone setting, and basic embellishment techniques as well as simple clasps. Designed for beginning sculpture, metals, or jewelry students, the projects may include a pierced pendant or brooch, a hollow constructed ring, a linked bracelet or necklace with clasp, and a bezel-set pendant or brooch. Students will become familiar with the safety, use, and maintenance of studio equipment and hand tools. No prior experience is required for this class. Attendance for the first class is mandatory.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.300. Advanced Fiber Structures. 3 Credits.

This advanced fiber class will build upon the techniques and experiences developed in Fiber Art, and the String Revolution and Sculptural Fibers. Students will have the chance to explore complex fiber structures and processes including knitting, crochet, lace, and floor loom weaving. Emphasis will be placed on personal exploration and expression through technical samples and longer-form independent projects supported through group critique and critical readings and discussions. Students will collectively present a cohesive body of work and artist statement of their semester explorations.

Prerequisite(s): AS.371.126 OR AS.371.226

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.305. Oil Painting III. 3 Credits.

In this advanced painting class students build on the techniques and concepts developed in Painting II. Through a combination of assignments and research students will further their understanding of contemporary painting practices, experiment with materials and ideas and continue to develop their painting skills. The semester will culminate with students creating a series of paintings on a research topic of their choice.

Prerequisite(s): AS.371.234

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.310. Landscape and Portraiture in Italy. 2 Credits.

Students must apply and be accepted through the Global Education Office.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

AS.371.311. Collage: Mining the Museum in Italy. 2 Credits.

Students must apply and be accepted through the Global Education Office.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

AS.371.401. Advanced Projects in Visual Art. 3 Credits.

An intensive look at the traditions and techniques of portrait drawing. Students will work from live models in a variety of media and study master portraits by Holbein, Rembrandt, Ingres, Degas, etc. Class trips to the Baltimore Museum of Art Print & Drawing Room and JHU Archaeological Museum will enhance knowledge and appreciation of the history and traditions of portraiture. Attendance for the first class is mandatory.

Prerequisite(s): AS.371.131 OR AS.371.133 OR AS.371.152 OR

AS.371.211 OR AS.371.236 OR AS.371.250 OR AS.371.234 OR

AS.371.237 OR AS.371.240

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.501. Independent Study. 2 Credits.

Students propose an independent body of work to be created over the course of the semester for one or two credits. Proposals must be sent to the instructor prior to approval for the course.

Prerequisite(s): You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration, Online Forms.

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.371.502. Independent Study. 2 Credits.

Students propose an independent body of work to be created over the course of the semester for one or two credits. Proposals must be sent to the instructor prior to approval for the course.

Prerequisite(s): You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration, Online Forms.

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

Cross Listed Courses

Anthropology

AS.070.361. The Future of Here: An Art and Anthropology Studio. 3 Credits.

This class is an occasion for speculative anthropology, a chance to reimagine this place (an American city on the Jones Falls river) in a future beyond the bustle of our fossil-fueled present. What culture might people of that distant time produce, and how might they make creative use of the many things we leave behind? In this class, we will work together as anthropologists and artists of another time, crafting an inventive and collaborative story about a culture to come, and the material artifacts of a very different collective life. The class will be co-taught by anthropologist Anand Pandian and visual artist Jordan Tierney. We will nurture our imaginations through experiential practices of observing nature, collecting materials, and assembling artifacts. What we build will serve as the core of a spring 2025 local museum exhibition we will plan together.

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.070.402. Environmental Justice Workshop. 4 Credits.

The Environmental Justice Workshop is a space for engaged learning and collaborative environmental work, giving students a chance to join in the collective struggle to build equitable and sustainable urban futures in Baltimore. In the fall of 2025, the workshop will be taught by anthropologist Anand Pandian (Johns Hopkins) as a cross-institutional partnership with anthropologist Chloe Ahmann (Cornell University) and the South Baltimore Community Land Trust. Working together as a team of faculty and students at both universities, we will collaborate with environmental justice activists and Baltimore residents to research, write, and produce a four-part digital humanities curriculum about the discriminatory history of waste management in Baltimore and its impact on working-class and minority residents. Students enrolled in this course will gain experience with archival and ethnographic research methods, learn how to conduct time-sensitive research responsive to community needs, and produce media resources for a broader civic audience engaged in the fight for environmental justice. Many class sessions will take place in various community locations in south Baltimore, and meeting times include transportation to/from the Homewood campus. Distribution Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences

AS Foundational Abilities: Writing and Communication (FA1), Ethics and Foundations (FA5), Projects and Methods (FA6)

AS.070.602. Environmental Justice Workshop. 4 Credits.

The Environmental Justice Workshop is a space for engaged learning and collaborative environmental work, giving students a chance to join in the collective struggle to build equitable and sustainable urban futures in Baltimore. In the fall of 2025, the workshop will be taught by anthropologist Anand Pandian (Johns Hopkins) as a cross-institutional partnership with anthropologist Chloe Ahmann (Cornell University) and the South Baltimore Community Land Trust. Working together as a team of faculty and students at both universities, we will collaborate with environmental justice activists and Baltimore residents to research, write, and produce a four-part digital humanities curriculum about the discriminatory history of waste management in Baltimore and its impact on working-class and minority residents. Students enrolled in this course will gain experience with archival and ethnographic research methods, learn how to conduct time-sensitive research responsive to community needs, and produce media resources for a broader civic audience engaged in the fight for environmental justice. Many class sessions will take place in various community locations in south Baltimore, and meeting times include transportation to/from the Homewood campus. Distribution Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences

Applied and Computational Mathematics

EN.625.638. Foundations of Neural Networks. 3 Credits.

This course will be a comprehensive study of the mathematical foundations for neural networks. Topics include feed forward and recurrent networks and neural network applications in function approximation, pattern analysis, signal classification, optimization, and associative memories. Prerequisites: Multivariable calculus, linear algebra

Center for Africana Studies

AS.362.140. Blackstorytelling: Public Health in the Black World. 3 Credits.

What about performance offers a unique opportunity to learn from and with communities? How might dramatic performance be used to share information while learning from an audience? This course examines the work and research of young artists from Liberia, West Africa who used street theatre to teach best practices for prevention during the Ebola crisis and considers how their use of dialogical performance contributed to critical knowledge which iteratively informed interventions throughout their awareness campaign. This community engaged course connects public health education efforts in Africa to community health education in Baltimore through the Blackstorytelling tradition with local expert Janice the Griot. Course co-educator and artist Janice the Griot Green will share her firsthand experiences and guide the class through the principles of Blackstorytelling for community change. Students will design public performance projects around local-global community-based concerns using the tools they have learned. In partnership with the Great National Blacks in Wax Museum in Baltimore, students will develop performance-based public health messaging drawing on their collection to support community outreach curricular materials development. This performance work will be created collaboratively in workshops during class and in team meetings. Public health researchers who are looking for innovative ways to share their data will gain insights into this experimental ethnographic method and practitioners who want to offer their communities ways to connect best practices to lived experience will develop new pedagogical tools. This is a Community Engagement course in partnership with the Center for Social Concern.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Citizens and Society (FA4), Ethics and Foundations (FA5), Projects and Methods (FA6)

EN Foundational Abilities: Engagement with Society (FA4)

AS.362.309. Performing the Archive 2022: 200 Years of US-Liberia Migration. 3 Credits.

This seminar will explore some of the pivotal historical and contemporary connections between the US and Liberia since the first Black American settlers arrived in West Africa with the American Colonization Society in 1822. This course asks: What are implications of these stories of migration and reception for how we make sense of global anti-Blackness in the contemporary moment? How does performance provoke new questions about shared histories of those impacted by colonialism and the transatlantic slave trade? Why is a more in-depth understanding of 19th century Black political thought and the precolonial West African indigenous category necessary for developing theory on the political economy of race today? Through the lens of performance studies, students will analyze the documents in the American Colonization Society archive, to reimagine these early encounters as informed by historical documentation including folklore and pan-Africanist theory. Through exploring a range of historical and contemporary materials that center the problematic “indigenous/settler” binary, students will engage in a dramaturgical process which presents powerful possibilities for unlearning historical misrepresentations. In particular, students will develop theater-based projects that interrogate the spatio-temporal connections between the stories of both, free Blacks and those who were enslaved in Maryland and manumitted to go to Liberia, and the contemporary politics of Liberia-US migration.

Distribution Area: Humanities, Social and Behavioral Sciences

Classics

AS.040.137. Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3 Credits.

This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

Writing Intensive

AS.040.631. Curating the Ancient in Baltimore. 3 Credits.

This collaborative seminar meets jointly with students from MICA to design an exhibition concerning a cast collection of ancient Mediterranean sculpture, founded in 1881, that resided at both institutions during different moments in its history (part of the collection is still located at MICA, where art students regularly engage with it). Participants will explore the dynamic position of the collection between these two urban institutions and its existence as part of the ongoing history of the city. This course is associated with the Baltimore ReCast Classics Research Lab. Advanced undergraduates can contact the instructor about joining the course.

Comparative Thought and Literature

AS.300.323. Shakespeare and Ibsen. 3 Credits.

William Shakespeare and Henrik Ibsen are the two most frequently performed playwrights in history, and both have been credited with reinventing drama: Shakespeare for the Elizabethan stage and Ibsen for the modern. In this course we will pair plays by each author – those that stand in an explicit relation of influence as well as those that share a significant set of concerns – in order to investigate how each takes up and transform key problems in Updated description: the literary, political, and philosophical tradition for their own historical moment. Plays to be studied by Shakespeare: Hamlet, King Lear, Coriolanus, The Tempest; by Ibsen: Hedda Gabler, The Wild Duck, An Enemy of the People, The Master Builder. As part of the course, we will try to organize at least one excursion to a Shakespeare or Ibsen performance in the Baltimore-D.C. area. This class counts towards the requirement of text-based courses for the minor in comparative thought and literature.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Ethics and Foundations (FA5)

AS.300.409. Modernist Animacies and the Politics of Wonder. 3 Credits.

From dancing skeletons and Mickey Mouse to nuclear-powered robots and Fritz the Cat, modernist visual culture is replete with iconic images of animated existence. This course surveys these diverse forms of “animatedness” emerging within the interconnected histories of special effects film and animated media, focusing on their entanglement with broader modernist practices, movements, and styles between the 1920s and the 1970s. Students will explore the shared origins of animation and special effects in the frame-by-frame manipulations of early trick film, the hopes and fears attached to machine aesthetics in German expressionism, French surrealism, and Soviet avant-garde cinema of the 1920s, and the ambivalent agency expressed by animated bodies in American and Japanese cartoons of the 1920s-40s. They will then assess the continuities and ruptures in the aesthetic and political commitments of interwar and postwar modernisms through case studies from North American, Central and Eastern European, and Japanese animation. By engaging with the diverse forms of “animatedness” and animated media presented in this course, students will develop critical theoretical, historical, and comparative frameworks for navigating the complex entanglements of organic life, emotional states, and machine technologies that increasingly define contemporary existence.

Prerequisite(s): Students may not have taken the AS.300.321 version of this course.

AS Foundational Abilities: Culture and Aesthetics (FA3)

Computer Science

EN.605.613. Introduction to Robotics. 3 Credits.

This course introduces the fundamentals of robot design and development with an emphasis on autonomy. Robot design, navigation, obstacle avoidance, and artificial intelligence will be discussed. Topics covered in robot design include robot structure, kinematics and dynamics, the mathematics of robot control (multiple coordinate systems and transformations), and designing for autonomy. Navigation topics include path planning, position estimation, sensors (e.g., vision, ultrasonics, and lasers), and sensor fusion. Obstacle avoidance topics include obstacle characterization, object detection, sensors and sensor fusion. Topics to be discussed in artificial intelligence include learning, reasoning, and decision making. Students will deepen their understanding through several assignments and the term-long robot development project.

EN.605.617. Introduction to GPU Programming. 3 Credits.

This course will teach the fundamentals needed to utilize the ever-increasing power of the GPUs housed in the video cards attached to our computers. For years, this capability was limited to the processing of graphics data for presentation to the user. With the CUDA and OpenCL frameworks, programmers can develop applications that harness this power directly to search, modify, and quickly analyze large amounts of various types of data. Students will be introduced to core concurrent programming principles, along with the specific hardware and software considerations of these frameworks. In addition, students will learn canonical algorithms used to perform high-precision mathematics and data transformations. Class time will be split between lectures and hands-on exercises. There will be two individual projects in both CUDA and OpenCL programming, which will allow students to independently choose demonstrable goals, develop software to achieve those goals, and present the results of their efforts.

EN.605.621. Foundations of Algorithms. 3 Credits.

This follow-on course to data structures (e.g., EN.605.202) provides a survey of computer algorithms, examines fundamental techniques in algorithm design and analysis, and develops problem-solving skills required in all programs of study involving computer science. Topics include advanced data structures (red-black and 2-3-4 trees, union-find), recursion and mathematical induction, algorithm analysis and computational complexity (recurrence relations, big-O notation, NP-completeness), sorting and searching, design paradigms (divide and conquer, greedy heuristic, dynamic programming, amortized analysis), and graph algorithms (depth-first and breadth-first search, connectivity, minimum spanning trees, network flow). Advanced topics are selected from among the following: randomized algorithms, information retrieval, string and pattern matching, and computational geometry. Prerequisite(s): EN.605.202 Data Structures or equivalent. EN.605.203 Discrete Mathematics or equivalent is recommended. Course Note(s): The required foundation courses may be taken in any order but must be taken before other courses in the degree. Students can only earn credit for one of EN.605.620, EN.605.621, EN.685.621 or EN.705.621

EN.605.624. Logic: Systems, Semantics, and Models. 3 Credits.

Traditionally, logic is the study of correct reasoning. In the last few decades, logic has become increasingly important to knowledge representation – a subfield of artificial intelligence concerned with developing representations of the world (often called ontologies) that aid computers in understanding and making sense of data. This course will promote both a theoretical and practical understanding of logic as a stepping stone for working in contemporary knowledge representation. We will begin with a review of categorical, propositional, and predicate logic. We will then survey modal logics, which include systems that represent necessity and probability, as well as other systems that represent time, and moral notions such as obligation and permissibility. The second half of the course will then introduce the semantic web and ontology engineering. Students will explore the top-level ontology Basic Formal Ontology (BFO) and gain familiarity using mereological and temporal relations. In addition, students will create ontologies in the web ontology language (OWL2) and use the language SPARQL to query knowledge graphs. Students will have the option of writing either a research paper or creating an ontology in OWL with slides as part of a final project.

EN.605.635. Cloud Computing. 3 Credits.

Cloud computing helps organizations realize cost savings and efficiencies without spending capital resources up front, while modernizing and expanding their IT capabilities. Cloud-based infrastructure is rapidly scalable, secure, and accessible over the Internet—you pay only for what you use. So, enterprises worldwide, big and small, are moving toward cloud-computing solutions for meeting their computing needs, including the use of Infrastructure as a Service (IaaS) and Platform as a Service (PaaS). We have also seen a fundamental shift from shrinkwrapped software to Software as a Service (SaaS) in data centers across the globe. Moreover, providers such as Amazon, Google, and Microsoft have opened their datacenters to third parties by providing low-level services such as storage, computation, and bandwidth. This trend is creating the need for a new kind of enterprise architect, developer, QA, and operational professional—someone who understands and can effectively use cloud-computing technologies and solutions. In this course, we discuss critical cloud topics such as cloud service models (IaaS, PaaS, SaaS); virtualization and how it relates to cloud; elastic computing; cloud storage; cloud networking; cloud databases; cloud security; and architecting, developing, and deploying apps in the cloud. The format of this course will be a mix of lectures, and hands-on demos. Upon completing this course, students will have a deeper understanding of what cloud computing is and the various technologies that make up cloud computing, along with hands-on experience working with a major cloud provider. Prerequisite(s): EN.605.202 Data Structures.

EN.605.645. Artificial Intelligence. 3 Credits.

This is a foundational course in Artificial Intelligence. Although we hear a lot about machine learning, artificial intelligence is a much broader field with many different aspects. In this course, we focus on three of those aspects: reasoning, optimization, and pattern recognition. Traditionally, the first was covered under “Symbolic AI” or “Good Old Fashioned AI” and the latter two were covered under “Numeric AI” (or more specifically, “Connectionist AI” or “Machine Learning”). However, despite the many successes of machine learning algorithms, practitioners are increasingly realizing that complicated AI systems need algorithms from all three aspects. This approach falls under the ironic heading “Hybrid AI”. In this course, the foundational algorithms of AI are presented in an integrated fashion emphasizing Hybrid AI. The topics covered include state space search, local search, example based learning, model evaluation, adversarial search, constraint satisfaction problems, logic and reasoning, expert systems, rule based ML, Bayesian networks, planning, reinforcement learning, regression, logistic regression, and artificial neural networks (multi-layer perceptrons). The assignments weigh conceptual (assessments) and practical (implementations) understanding equally.

Prerequisite(s): EN.605.621 Foundations of Algorithms. A working knowledge of Python programming is assumed as all assignments are completed in Python.

EN.605.646. Natural Language Processing. 3 Credits.

This course surveys the principal difficulties of working with written language data, the fundamental techniques that are used in processing natural language, and the core applications of NLP technology. Topics covered in the course include language modeling, text classification, labeling sequential data (tagging), parsing, information extraction, question answering, machine translation, and semantics. The dominant paradigm in contemporary NLP uses supervised machine learning to train models based on either probability theory or deep neural networks. Both formalisms will be covered. A practical approach is emphasized in the course, and students will write programs and use open source toolkits to solve a variety of problems. Course prerequisite(s): There are no formal prerequisite courses, although having taken any of EN.605.649 Introduction to Machine Learning, EN.605.744 Information Retrieval, or EN.605.645 Artificial Intelligence is helpful. Course note(s): A working knowledge of Python is assumed. While some of the assigned exercises can be done in any programming language, we will sometimes provide example code in Python, and many of the labs are best solved in Python. Course note(s): A working knowledge of Python is assumed. While some of the assigned exercises can be done in any programming language, we will sometimes provide example code in Python, and many of the labs are best solved in Python.

EN.605.647. Neural Networks. 3 Credits.

This course provides an introduction to concepts in neural networks and connectionist models. Topics include parallel distributed processing, learning algorithms, and applications. Specific networks discussed include Hopfield networks, bidirectional associative memories, perceptrons, feedforward networks with back propagation, and competitive learning networks, including self-organizing and Grossberg networks. Software for some networks is provided. Prerequisite(s): Multivariate calculus and linear algebra.

EN.605.649. Principles and Methods in Machine Learning. 3 Credits.

Analyzing large data sets ("Big Data"), is an increasingly important skill set. One of the disciplines being relied upon for such analysis is machine learning. In this course, we will approach machine learning from a practitioner's perspective. We will examine the issues that impact our ability to learn good models (e.g., inductive bias, the curse of dimensionality, the bias-variance dilemma, and no free lunch). We will then examine a variety of approaches to learning models, covering the spectrum from unsupervised to supervised learning, as well as parametric versus non-parametric methods. Students will explore and implement several learning algorithms, including logistic regression, nearest neighbor, decision trees, and feed-forward neural networks, and will incorporate strategies for addressing the issues impacting performance (e.g., regularization, clustering, and dimensionality reduction). In addition, students will engage in online discussions, focusing on the key questions in developing learning systems. At the end of this course, students will be able to implement and apply a variety of machine learning methods to real-world problems, as well as be able to assess the performance of these algorithms on different types of data sets. Prerequisite(s): EN.605.202 – Data Structures or equivalent.

Prerequisite(s): EN.605.202 – Data Structures or equivalent, EN.605.621 – Foundations of Algorithms or EN.685.621 – Algorithms for Data Science or 705.621 – Introduction to Algorithms

EN.605.662. Data Visualization. 3 Credits.

This course explores the underlying theory and practical concepts in creating visual representations of large amounts of data. It covers the core topics in data visualization: data representation, visualization toolkits, scientific visualization, medical visualization, information visualization, flow visualization, and volume rendering techniques. The related topics of applied human perception and advanced display devices are also introduced. Prerequisite(s): Experience with data collection/analysis in data-intensive fields or background in computer graphics (e.g., EN.605.667 Computer Graphics) is recommended.

EN.605.742. Deep Neural Networks. 3 Credits.

This hands-on course provides a practical introduction to deep neural networks (DNNs), designed to deepen students' understanding of advanced deep learning (DL) techniques. Modeled after the brain's architecture, DNNs drive powerful applications in natural language processing (NLP), computer vision (CV), and speech processing—especially with unstructured data like text, images, video, and audio. The course begins with a four-week refresher on machine learning (ML), focusing on model evaluation and feature engineering using Python and Scikit-Learn (SKL). Prior experience with Python and SKL-based ML models is expected. From there, we transition to TensorFlow and Keras, exploring key DNN architectures including convolutional neural networks (CNNs), recurrent neural networks (RNNs), long short-term memory (LSTM), attention mechanisms, generative adversarial networks (GANs), deep reinforcement learning (DRL), transfer learning, and more. Students will read seminal DL papers and collaborate in teams on weekly Kaggle challenges to apply their skills. Teamwork is central to the course, which concludes with a final presentation based on a public ML/DL competition.

Prerequisite(s): A course in Machine Learning

EN.605.743. Advanced Artificial Intelligence. 3 Credits.

Many advanced artificial intelligence systems are using both Machine Learning and Symbolic AI to solve subproblems. This course builds on the foundations of EN.605.645 Artificial Intelligence by delving more deeply into those AI algorithms and approaches that go under the name of Good Old Fashioned AI or Symbolic AI. In this course, we will cover logic programming, expert systems and business rules, fuzzy logic, case based reasoning, and knowledge graphs. We will also explore more advanced versions of planning and reinforcement learning algorithms. The instructor may add additional topics as warranted. Prerequisite(s): EN.605.645 Artificial Intelligence or permission of instructor.

Prerequisite(s): EN.605.645 Artificial Intelligence

EN.605.745. Reasoning Under Uncertainty. 3 Credits.

This course is concerned with the problems of inference and decision making under uncertainty. It develops the theoretical basis for a number of different approaches and explores sample applications. The course discusses foundational issues in probability and statistics, including the meaning of probability statement, and the necessity of a rational agent acting in accord with probability theory. We will look at possible generalizations of Bayesian probability, including Dempster-Shafer theory. Next, we will develop algorithms for Bayesian networks—graphical probabilistic models—for exact and approximate inference and consider several application areas. Finally, the course will examine the problem of making optimal decisions under uncertainty. We will explore the conceptual foundations of decision theory and then consider influence diagrams, which are graphical models extending Bayesian networks to the domain of decision analysis. As time permits, we will also look at Bayesian games and Markov decision processes. Pertinent background in probability and theoretical computer science is developed as needed in the course.

EN.605.746. Advanced Machine Learning. 3 Credits.

This course focuses on recent advances in machine learning and on developing skills for performing research to advance the state of knowledge in machine learning. The material integrates multiple ideas from basic machine learning and assumes familiarity with concepts such as inductive bias, the bias-variance trade-off, the curse of dimensionality, and no free lunch. Topics range from determining appropriate data representations and models for learning, understanding different algorithms for knowledge and model discovery, and using sound theoretical and experimental techniques in assessing learning performance. Specific approaches discussed cover nonparametric and parametric learning; supervised, unsupervised, and semi-supervised learning; graphical models; ensemble methods; and reinforcement learning. Topics will be discussed in the context of research reported in the literature within the previous two years. Students will participate in seminar discussions and will present the results of a semester-long research project of their own choosing.

Prerequisite(s): EN.605.649 Introduction to Machine Learning; multivariate calculus; Students cannot receive credit for both EN.605.746 and EN.625.742

EN.605.747. Evolutionary and Swarm Intelligence. 3 Credits.

Recently, principles from the biological sciences have motivated the study of alternative computational models and meta-heuristic approaches to problem solving. Proceeding from a machine learning perspective, this course explores how principles from theories of evolution, natural selection, and swarming behavior can be used to construct machines that exhibit nontrivial behavior. In particular, the course covers techniques from evolutionary computation and swarm intelligence for developing software agents capable of solving problems as members of a larger population of agents. Specific topics addressed include representation and schemata; selection, reproduction, and recombination; theoretical models of computational intelligence; optimal allocation of trials (i.e., bandit problems); search, optimization, and machine learning; evolution of programs; population and swarm dynamics; and emergent behavior. Students will participate in seminar discussions and will complete and present the results of an individual project.

Prerequisite(s): EN.605.649 Introduction to Machine Learning; multivariate calculus.

Critical Study of Racism, Immigration, & Colonialism**AS.305.319. Freedom Education: Embodied Speculative History of Maryland Schools for African Americans in the 1800s. 3 Credits.**

Maryland had the largest pre-Civil War population of free African Americans who were intent on creating the educational means necessary to maintain their own freedom and uplift. Education and land ownership was tantamount to securing standing in society and to forging an early, even if fraught, sense of social citizenship and its benefits. In this course, students will support the research efforts of a local Maryland school house museum to develop immersive, experiential learning and engagement tools. Drawing on material and documents specific to the museum such as objects, curricular texts, original letters, newspaper accounts, experiences of the first teachers, and contemporaneous accounts of teaching in Freedmen's schools, students will engage in a speculative history that will serve as the foundation for creative reenactment of freedom education in early 1800s Maryland.

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Cybersecurity**EN.695.637. Introduction to Assured AI and Autonomy. 3 Credits.**

In order to drive a future where artificial intelligence (AI) enabled autonomous systems are trustworthy contributors to society, these capabilities must be designed and verified for safe and reliable operation and they must be secure and resilient to adversarial attacks. Further, these AI enabled autonomous systems must be predictable, explainable and fair while seamlessly integrated into complex ecosystems alongside humans and technology where the dynamics of human-machine teaming are considered in the design of the intelligent system to enable assured decision-making. In this course, students are first introduced to the field of AI, covering fundamental concepts, theory, and solution techniques for intelligent agents to perceive, reason, plan, learn, infer, decide and act over time within an environment often under conditions of uncertainty. Subsequently, students will be introduced to the assurance of AI enabled autonomous systems, including the areas of AI and autonomy security, resilience, robustness, fairness, bias, explainability, safety, reliability and ethics. This course concludes by introducing the concept of human-machine teaming. Students develop a contextual understanding of the fundamental concepts, theory, problem domains, applications, methods, tools, and modeling approaches for assuring AI enabled autonomous systems. Students will implement the latest state-of-the-art algorithms, as well as discuss emerging research findings in AI assurance.

EN.695.715. Assured Autonomy. 3 Credits.

Autonomic systems leverage the growing advances in control, computer vision, and machine learning coupled with technological advances in sensing, computation, and communication. While this emerging highly connected, autonomous world is full of promise, it also introduces safety and security risks that are not present in legacy systems. This course focuses on the complexities inherent in autonomous systems and the multifaceted and multilayered approaches necessary to assure their secure and safe operation. As these systems become more pervasive, guaranteeing their safe operation even during unforeseen and unpredictable events becomes imperative. There are currently no real solutions to provide these runtime guarantees necessitating cutting-edge research to provide state awareness, intelligence, control, safety, security, effective human-machine interaction, robust communication, and reliable computation and operation to these systems. This online course in a seminar-style format leads the students to participate in learning activities, record summary presentation of a selection of papers, write a peer-reviewed publication-quality paper, and record a workshop presentation for virtual panel review.

Data Science

EN.685.621. Algorithms for Data Science. 3 Credits.

This course offers an in-depth journey through the algorithmic concepts vital for mastering the intricacies of data science. It begins with an intensive examination of algorithm analysis, with a special focus on understanding the runtime complexities essential for addressing real-world data problems. The curriculum encompasses thorough training in data preprocessing, along with foundational knowledge in probability and statistics, equipping students to proficiently clean and interpret data. The course introduces key mathematical transformations such as Eigen decomposition, FFT, DCT, and Wavelets. These tools are crucial for unearthing underlying patterns in data by creating innovative feature spaces. Students will explore a seamless blend of diverse algorithm types, including intelligent algorithms, statistical algorithms, optimization algorithms, graph algorithms, and learning algorithms. This comprehensive approach, enriched with optimization techniques, forms a holistic toolkit for the contemporary Data Scientist. Moving beyond theoretical concepts, the course delves into practical aspects of analysis, visualization, and understanding of complexity classes. Occasional forays into algorithmic proofs enhance the theoretical grounding of students, bridging theory with practical application. The course culminates in modules focused on data modeling and visualization, enabling students to adeptly apply algorithmic techniques to produce insightful and meaningful data representations. Upon completing this course, students will be thoroughly equipped with both practical and theoretical algorithmic strategies, preparing them to confidently address a wide array of challenges in the data science field. Students can only earn credit for one of EN.605.620, EN.605.621, or EN.685.621.

Electrical and Computer Engineering

EN.525.661. UAV Systems and Control. 3 Credits.

This hardware-supplemented course covers the guidance, navigation-and control principles common to many small fixed-wing and multirotor unmanned aerial vehicles (UAVs). Building on classical control systems and modeling theory, students will learn how to mathematically model UAV flight characteristics and sensors, develop and tune feedback control autopilot algorithms to enable stable flight control, and fuse sensor measurements using extended Kalman filter techniques to estimate the UAV position and orientation. Students will realize these concepts through both simulation and interaction with actual UAV hardware. Throughout the course, students will build a full 6-degree-of-freedom simulation of controlled UAV flight using MATLAB and Simulink. Furthermore, students will reinforce their UAV flight control knowledge by experimenting with tuning and flying actual open-source quadrotor UAVs. Prerequisite(s): Background in control systems (e.g., EN.525.609 Continuous Control Systems) and matrix theory along with a working knowledge of MATLAB. Experience using Simulink is desired. Existing familiarity with C programming language, electronics, and microcontrollers will be helpful but is not required.

EN.525.670. Machine Learning for Signal Processing. 3 Credits.

This course will focus on the use of machine learning theory and algorithms to model, classify, and retrieve information from different kinds of real world signals such as audio, speech, image, and video.

Prerequisite(s): EN.525.627 Digital Signal Processing and EN.525.614 Probability and Stochastic Processes for Engineers

EN.525.724. Introduction to Pattern Recognition. 3 Credits.

This course focuses on the underlying principles of pattern recognition and on the methods of machine intelligence used to develop and deploy pattern recognition applications in the real world. Emphasis is placed on the pattern recognition application development process, which includes problem identification, concept development, algorithm selection, system integration, and test and validation. Machine intelligence algorithms to be presented include feature extraction and selection, parametric and non-parametric pattern detection and classification, clustering, artificial neural networks, support vector machines, rule-based algorithms, fuzzy logic, genetic algorithms, and others. Case studies drawn from actual machine intelligence applications will be used to illustrate how methods such as pattern detection and classification, signal taxonomy, machine vision, anomaly detection, data mining, and data fusion are applied in realistic problem environments. Students will use the MATLAB programming language and the data from these case studies to build and test their own prototype solutions.

Prerequisite(s): EN.525.614 Probability and Stochastic Processes for Engineers or equivalent. A course in digital signal or imageprocessing is recommended, such as EN.525.627 Digital Signal Processing, EN.525.619 Introduction to Digital Image and Video Processing, 525.643 Real-Time Computer Vision, or 525.746 Image Engineering.

EN.525.733. Deep Learning for Computer Vision. 3 Credits.

Recent technological advances coupled with increased data availability have opened the door for a wave of revolutionary research in the field of Deep Learning. In particular, Deep Neural Networks (DNNs) continue to improve on state-of-the-art performance in many standard computer vision tasks including image classification, segmentation, object recognition, object localization, and scene recognition. With an emphasis on computer vision, this course will explore deep learning methods and applications in depth as well as evaluation and testing methods. Topics discussed will include network architectures and design, training methods, and regularization strategies in the context of computer vision applications. Following a seminar format, students will be expected to read, understand, and present recent publications describing the current state-of-the-art deep learning methods. Additionally, team projects will give students an opportunity to apply deep learning methods to real world problems. Prerequisite(s): Students should have taken courses in computer vision and machine learning/pattern recognition, have basic familiarity with OpenCV, Python and C++, as well as prior class instruction in neural networks.

EN.525.770. Intelligent Algorithms. 3 Credits.

Intelligent algorithms are, in many cases, practical alternative techniques for tackling and solving a variety of challenging engineering problems. For example, fuzzy control techniques can be used to construct nonlinear controllers via the use of heuristic information when information on the physical system is limited. Such heuristic information may come, for instance, from an operator who has acted as a "human-in-the-loop" controller for the process. This course investigates several concepts and techniques commonly referred to as intelligent algorithms; discusses the underlying theory of these methodologies when appropriate; and takes an engineering perspective and approach to the design, analysis, evaluation, and implementation of Intelligent Systems. Fuzzy systems, genetic algorithms, particle swarm and ant colony optimization techniques, and neural networks are the primary concepts discussed in this course, and several engineering applications are presented along the way. Expert (rule-based) systems are also discussed within the context of fuzzy systems. An intelligent algorithms research paper must be selected from the existing literature, implemented by the student, and presented as a final project. Prerequisite(s): Student familiarity of system-theoretic concepts is desirable.

EN.525.786. Human Robotics Interaction. 3 Credits.

This course provides an investigation of human-robot interaction and prosthetic control, with a focus on advanced man-machine interfaces including neural signal processing, electromyography, and motion tracking interfaces for controlling and receiving feedback from robotic devices. The course will also cover human physiology and anatomy, signal processing, intent determination, communications between the human and the device, haptic feedback, and telepresence. It is designed to be a hands-on course with class time spent in the dedicated robotics lab designing interfaces and performing experiments in a Virtual Integration Environment (VIE) and with robotic devices. Additional time in the lab, outside of class time, may be required to complete the course project. Programming for the class will be in MATLAB and Simulink. Prerequisite(s): Linear algebra, ordinary differential equations, and programming experience with Python or MATLAB

English**AS.060.136. Theater at the End of the World. 3 Credits.**

The world is ending, the planet is dying, civilization is falling to ruin – now what? For millennia, theatermakers have asked and answered this question through their art. Why does theater keep staging such scenes of devastation and renewal? In this course, you will read a selection of such apocalyptic plays, as well as works in other genres that ask us to imagine that, when all else has withered away, the theater will somehow survive. Course materials will range from medieval morality plays and Shakespearean tragedies to recent novels, avant-garde theater, and Broadway musicals. With the help of texts by and about BIPOC performers, we will also ask: For whom, exactly, is the world supposed to be ending? For whom did it end at least once already – whether years or centuries ago? And what does theater offer to communities who have already survived the apocalypse, or who currently live in apocalyptic times? As an introduction to college-level studies in English, this course teaches the fundamental skills of close reading, attentive viewing, deep discussion, powerful writing, and effective revision.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Writing Intensive

Environmental Health and Engineering**EN.570.367. Sustainability Science and Policy: The Threat of Climate Change. 3 Credits.**

The challenge of sustainability is simultaneously promoting human well-being while protecting the environment. Advancing a transition toward sustainability hinges on applying what we know to what we should do, including undergirding public policies with knowledge—especially knowledge gleaned from science, technology, and engineering. This course examines sustainability science, communications, and public policy through the lens of climate—what is known about climate change and impacts, what motivates public understanding, and what actions through mitigation and adaptation make progress toward sustainability.

Extrdepartmental Studies**PH.552.602. The Role of Quantitative Methods in Public Health. 0.5 Credits.**

Covers the bases for the role of quantitative methods in public health, including how to formulate scientific questions quantitatively, different types of data, properties characterizing high or poor quality of measurements, the implications of statistical uncertainty, and the difference between association and causation. Uses illustrative case examples including the opioid epidemic and aging.

Film and Media Studies**AS.061.140. Introduction to Cinema, 1892-1960. 3 Credits.**

In this course students will learn the fundamentals of film analysis through a survey of American and international films from the silent era to the early 1960s. With an emphasis on discussion over lecture, the class will consider selections from Africa, Asia, Central America, Europe, and the U.S. In addition to lively class participation, requirements include quizzes, shot analysis exercises, and short written responses. No prior experience in film studies required. Non-majors and pre-majors welcome!

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Writing Intensive

AS.061.141. Introduction to Cinema, 1960-present. 3 Credits.

Introduction to Cinema provides an overview of American and international cinema from 1960 to the present. Through lectures and discussion, weekly screenings, and intensive visual analysis of individual films, we will explore the aesthetic, cultural, political, and economic forces that have shaped the art and industry of film over the past 60 years. Regular quizzes, writing assignments, class participation required. Mandatory film screenings.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Writing Intensive

AS.061.149. Anime: A History and Its Influences. 3 Credits.

In this course we will explore the history of anime through weekly screenings and short response papers. Directors include early filmmakers Shimokawa, Kouchi, Kitayama and more contemporary influential directors including Miyazaki (Princess Mononoke), Oshii (Ghost in the Shell), Otomo (Akira) and Kon (Paprika). Creative assignments will explore anime's relationship to manga and students will create a short animation as a final project. This class is open to all and no previous animation experience is required.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

Writing Intensive

AS.061.152. Introduction to Digital Video Production. 3 Credits.

This course introduces students to the world of digital filmmaking. Through screenings, production assignments, and in-class labs, students will develop proficiency in digital cameras, sound recording devices, and software. Students will work individually to produce several video projects. For their final projects students will pitch an idea and develop a more complex film.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.061.219. Special Topics: Animation Workshop. 3 Credits.

Students will produce several animations using hand-made techniques, including drawing animation, paper puppets and stop-motion. Screenings and readings will provide a historical and conceptual context to the exploration of animation as an experimental technique within both narrative and non-narrative works.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

AS.061.245. Introduction to Film Theory. 3 Credits.

This course offers an introduction to the major paradigms of film theory, covering how significant thinkers have conceived of the medium from its inception to the present day. Frequent film screenings help to illustrate key concepts. Topics include the classical opposition between formalist and realist film theories as well as critical approaches to narrative, spectatorship, and representation. Students are expected to enter the course ready to engage in discussion. Weekly film screenings. \$50 lab fee.

Prerequisite(s): AS.061.140 OR AS.061.141

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3)

Writing Intensive

AS.061.248. Women Making Films About Women. 3 Credits.

This course will examine films (features and shorts) throughout the history of cinema beginning with Alice Guy-Blaché. We will look at how form reveals content, thematic issues and how films relate to the culture and politics of the filmmaker. Filmmakers include Germaine Dulac, Nelly Kaplan, Marguerite Duras, Chantal Ackerman, Barbara Hammer and Nina Menkes. Readings include critical essays, texts by the filmmakers and fiction. Assignments consist of weekly papers on the films.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

Writing Intensive

AS.061.378. Automatic Animation. 3 Credits.

A hand-made, 2-D animation course based on ideas of automatism. Students will create their own animated movie during the semester with in-class animation exercises. Readings will include Dada and Surrealist texts, poetry and theory of poetics. Sound ideas will be discussed and pursued related to the ideas explored throughout the semester. \$125 lab fee.

Prerequisite(s): AS.061.145 OR AS.061.152

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

First Year Seminars**AS.001.129. FYS: Environmental Poisons. 3 Credits.**

An exploration of the occurrence and potential effects of poisons in the environment, from naturally occurring ones such as arsenic to those that may be introduced by mankind such as nuclear waste.

Distribution Area: Natural Sciences

AS.001.157. FYS: Leonardo da Vinci - Art, Science, and Medicine. 3 Credits.

How does a notary's son trained as a painter gain expertise in the construction of machines and acquire knowledge of the principles of optics, human anatomy, the flight of birds, the dynamics of air and water? How did an artist/engineer who brought few projects to completion come to have such a huge impact on later generations? This First-Year Seminar will focus critically on the myth of Leonardo's singularity while showing his achievements to be characteristic of the artisanal culture of his time.

Distribution Area: Humanities

AS.001.162. FYS: From Shakespeare to Baltimore. 3 Credits.

This First-Year Seminar is designed around what is on stage in Baltimore and DC this fall. We will attend several plays, both professional productions and student productions at JHU. We will pay attention to the interpretation of plays on the page, and to the ways that scripts materialize as performances on the stage. We will place these performances in the context of larger theatre histories, studying great plays from the age of Shakespeare to contemporary American theatre. No acting experience is required – just the desire to explore the theatre of today. A great way to find out about the lively theatre scene on campus, and a great way to get to know your new city.

AS.001.167. FYS: The Natural History of the Homewood Campus. 3 Credits.

Johns Hopkins University Homewood campus and its surroundings is a wonderful green space in the middle of Baltimore City. This First-Year Seminar will introduce students to both the visible and cryptic organisms living above- and belowground. A combination of observational and sampling techniques will be used to demonstrate how ecologists collect data about plants, insects, and other organisms. In the classroom, these field observations, combined with reading material will be used to discuss global environmental issues including climate change on biodiversity, invasive species, and human impacts on the landscape. By the end of the course students will be able to generate research questions based upon field observations and appreciate the diverse life forms both in Earth and in our backyard. Students should be prepared to spend many hours outside.

Distribution Area: Natural Sciences

AS.001.207. FYS: Looms and Computers: The analog origins of our digital world. 3 Credits.

The loom is the ancestor of the modern computer: we owe our digital existence to an analog woven structure. In this First-Year Seminar, we will examine the digital screens that surround us, the faces and images projected upon them, and how we can understand them better through fiber art processes. Through discussions of traditional and modern artists as well as hands-on fiber experiments and techniques, we will explore the relationship between the tactile and the digital. With visiting artists and museum trips, we'll discover new ways to engage with the screens, textiles, and pixels that surround us.

AS.001.215. FYS: Mosques, Museums, and the Mind's Eye: Discovering Islamic Art in Person. 3 Credits.

Despite its association with distant regions and time periods, Islamic art has a flourishing presence in today's America, represented by rich museum collections, modern buildings designed in historical styles, and vibrant scholarly networks. This seminar explores how we, from the vantage point of twenty-first-century Baltimore, might experience works of Islamic art in ways that are informed by their own cultural contexts while also acknowledging the challenges involved in bridging this gap. We will spend much of the course engaging with objects and architecture in person, with visits planned to the recently reinstalled Islamic galleries at the Walters Art Museum in Baltimore, the Islamic Center of Washington, DC, and the Metropolitan Museum of Art in New York. You will be invited to handle artifacts in person and to try your hand at calligraphy, one of the most distinctive and esteemed Islamic artforms. In the classroom setting, we will read and discuss translations of primary sources written by historical practitioners and consumers of Islamic art, along with examples of modern scholarship that seek to understand the Islamic tradition from a variety of perspectives. As well as learning about such perspectives, you will be encouraged to develop and share—in presentations and written assignments—your own ideas about Islamic art, building on the close, firsthand encounters that run throughout the seminar.

Distribution Area: Humanities

AS.001.217. FYS: From Cell Phones to Hydrogen Cars: Are the Needed Metals Sustainable?. 3 Credits.

Where do critical metals that we use every day for our technologically advanced society come from? We will discuss questions surrounding the exploration and ownership of metallic resources and their exploitation. We benefit, but at what cost to others? To address these questions, we look at individual critical metals and their exploitation in a variety of countries from Africa, to South America, and Southeast Asia including Australia. As an example, cobalt is currently crucial for electric car batteries: see the book by Siddharth Kara (2022) "Cobalt Red: How the Blood of the Congo Powers Our Lives". Should we alternatively get cobalt by the proposed mining of the deep ocean floor? Who has the right to do that? Weekly readings and discussions, and guest speakers lead to mini-research projects on such topics.

AS.001.253. FYS: The Drama of Artificial Intelligence. 3 Credits.

From the rise of machine consciousness to the ethics of automation, artificial intelligence has captured the human imagination. This First-Year Seminar explores how playwrights and theater artists engage with AI as a dramatic subject, a creative tool, and a lens for examining the human condition. Through an interdisciplinary approach, and co-taught by faculty in Psychological and Brain Sciences and Theatre, students will analyze plays and performances that grapple with the hopes and anxieties surrounding AI. Works such as Karel Capek's *R.U.R.* (which introduced the word "robot"), Jordan Harrison's *Marjorie Prime*, Jennifer Haley's *The Nether*, and Nick Payne's *Constellations* will serve as key texts alongside contemporary plays such as Julia Cho's *The Language*, Rolin Jone's *The Intelligent Design of Jenny Chow*, *The Effect* by Lucy Prebble, and *Photograph 51* by Anna Ziegler. We will also discuss experimental performances that integrate AI technologies.

AS.001.259. FYS: Global Nude: The Art of the Human Body in the World. 3 Credits.

Ever wonder: we are all born nude, but most of us wear clothes, at least when facing the public in our adult life. We are told nude is not the same as just "naked": it is an art form. However, in grand museums, we see plenty of representation of nudes in, let's say, the European wings. But if we turn the corner to other galleries dedicated to other traditions of art, we might see none. We gaze at a marble statue of a classical nude there, and when we go watch a film with nude scenes in a cinema with friends and strangers, we respond very differently in these two spaces. We quickly ask ourselves, is this pornographic? Is this art? Am I cool? Do I look prudish? In this First-Year Seminar, we will go to museums, watch movies, and take a global, historical, and multimedia perspective to approach nude as art in the world. How is nude defined? What are the philosophical and scientific ideas that find nude as an ideal vehicle? What are the historical and cultural particularities of classical nude that have been taken for centuries as universal? How do other art traditions approach the representation of an unclothed nude body? How are nudes gendered, sexualized, classed, and racialized? How do modern media transform nude? These are among the questions that this class explores. The Truth is naked, as the saying goes. Nude is therefore a mirror reflecting both the foundations and aspirations of humanity.

AS.001.284. FYS: Forensic Isotopes: Where does your food come from and should you care?. 3 Credits.

Knowing where your food comes from is important for various environmental, health, ethical, and aesthetic reasons. Stable isotopes – forms of the same element with different masses – can be used to verify the origin of food. In this First-Year Seminar, we will discuss motivations for determining food sources including questions of the environmental cost of different modes of production, the different environmental factors that impact nutrient levels in food, how regional laws affect food production practices, and how protected designation of origin labels impact how food is made and distributed. We will also discuss how stable isotope signatures can be used to identify food origin and how we assess confidence in stable isotope-based identifications. Have no doubt: in-class food tastings will most definitely be used to guide the discussion of aesthetic motivations for knowing where food comes from.

AS.001.285. FYS: Seeing Nature- Environment and Art. 3 Credits.

This First-Year Seminar combines ecology and art, allowing students to create art inspired by observations of the natural environment. Taken together, these dual methodologies of scientific observation and artistic production will encourage students to explore core questions about human creativity as influenced by nature. The course invites participants to consider their sensory experiences about the poetics and intricacies of the natural world. Together we will focus on ecological details, observing natural patterns and exploring their symbolic meanings. We will also learn to appreciate the visual language of fine art by taking a broader view of landscapes. Through museum visits, recording sounds in nature, and creating visual representations such as drawings, photographs, and video, students will develop various art techniques, culminating in a multimedia art form.

Health Policy and Management**PH.552.601. Foundational Principles of Public Health. 0.5 Credits.**

Provides a broad systematic understanding of the executive practice of public health from its inception to modern day. Uses case studies, as well as ethical and public health practice frameworks to provide students with a grounding in "what is public health practice," why it is important, and why it is contested.

History

AS.100.144. Shopaholics: Consumer Revolution and the Material World, 1600-1850. 3 Credits.

We live in a world of global consumption. This course introduces students to the birth of global consumer culture in the period from the 1600s through to the American, French and Haitian revolutions. These revolutions were themselves sold to consumers through "revolutionary things", and this period witnessed the first major consumer boycotts against slave-produced goods. Students will examine the histories of many key commodities involved in the "consumer revolution", including fashion items such as shoes, wigs, clothing and accessories. A significant portion of the course will examine addictive stimulants like sugar, coffee, tea and tobacco, globalized and imperial goods which became common for the first time in this period. We shall see how production of these goods involved new forms of racialized exploitation; simultaneously, we shall explore the diversity of people involved in the consumer revolution, studying the consumption of important new goods by people living in Europe, the Americas, Africa and Asia. By the end of the class, students will understand how the emergence of mass consumption affected the global politics of race, gender and class, with especially important consequences for women and non-elite men. Students will examine objects lauded for their politeness, decorative appeal, and cultural importance such as porcelain tea sets, snuffboxes, and fans. Students will choose their own objects for a student presentation and research project.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3)

Writing Intensive

AS.100.601. Decolonizing The Museum: Case Studies. 3 Credits.

How do museums represent the world? The course will focus on the colonial legacy of museums and complicate discourses of decolonization by looking at a range of case studies. We will study the world's fairs, artworks, artifacts, collections, curatorial practices, exhibition histories, repatriation requests, and exhibitionary modes of display, in order to analyze their relationship to histories of decolonization, temporality, translation, untranslatability, spectatorship, provenance, and the life of objects.

Distribution Area: Humanities, Social and Behavioral Sciences

History of Art

AS.010.292. Greek Tragedy and the Visual Arts. 3 Credits.

We will read a selection of Greek tragedies in translation and explore the visual arts that appear in, shaped, and respond to them.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

Interdepartmental

AS.360.339. Planets, Life and the Universe. 3 Credits.

This multidisciplinary course explores the origins of life, planet formation, Earth's evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions, and planetary protection. Recommended Course Background: Three upper level (300+) courses in sciences (Biophysics, Biology, Chemistry, Physics, Astronomy, Math, or Computer Science).

Prerequisite(s): Students may not register for this class if they have already received credit for AS.020.334 OR AS.020.616 OR AS.171.333 OR AS.171.699 OR AS.270.335 OR AS.360.671

Distribution Area: Natural Sciences

AS Foundational Abilities: Science and Data (FA2), Ethics and Foundations (FA5)

AS.360.408. Experiential Research Lab. 3 Credits.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3)

Writing Intensive

AS.360.410. Humanities Research Lab: The Dutch Americas. 3 Credits.

The Dutch East India Company, or VOC, is historically and art historically well documented and firmly understood. But the Dutch also had significant holdings to the west via the Dutch West India Company, or WIC. They operated and held outposts in the present-day United States (New York/New Amsterdam), Caribbean (Surinam, Curaçao, Bonaire), Latin America (Brazil), and West Africa. Despite the abundance of materials associated with the WIC from this wide geography, these have been scarcely assessed by art historians, and a defined and comprehensive corpus has never been assembled. This class will act as a research lab in which to do so. In research teams, students will map artworks and objects created from that broad, transnational cultural ambit—categories that might include maps, landscape paintings, still life paintings featuring American flora and fauna, botanical illustrations, plantation architecture, luxury objects made from precious raw materials gathered in the Americas, the urban environment of slavery—and develop individual research questions around them. The class will run with a partner lab in the form of a course led by Professor Stephanie Porras at Tulane University. The course will feature speakers; and there is potential for funded travel to conduct research. We will start at the ground level; no previous knowledge about the field is required. Students from all disciplines are welcome.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

Writing Intensive

AS.360.610. Humanities Research Lab: The Dutch Americas. 3 Credits.

The Dutch East India Company, or VOC, is historically and art historically well documented and firmly understood. But the Dutch also had significant holdings to the west via the Dutch West India Company, or WIC. They operated and held outposts in the present-day United States (New York/New Amsterdam), Caribbean (Surinam, Curaçao, Bonaire), Latin America (Brazil), and West Africa. Despite the abundance of materials associated with the WIC from this wide geography, these have been scarcely assessed by art historians, and a defined and comprehensive corpus has never been assembled. This class will act as a research lab in which to do so. In research teams, students will map artworks and objects created from that broad, transnational cultural ambit—categories that might include maps, landscape paintings, still life paintings featuring American flora and fauna, botanical illustrations, plantation architecture, luxury objects made from precious raw materials gathered in the Americas, the urban environment of slavery—and develop individual research questions around them. The class will run with a partner lab in the form of a course led by Professor Stephanie Porras at Tulane University. The course will feature speakers; and there is potential for funded travel to conduct research. We will start at the ground level; no previous knowledge about the field is required. Students from all disciplines are welcome.

Writing Intensive

AS.360.671. Planets, Life and the Universe. 3 Credits.

This multidisciplinary course explores the origins of life, planet formation, Earth's evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions, and planetary protection. Recommended Course Background: Three upper level (300+) courses in sciences (Biophysics, Biology, Chemistry, Physics, Astronomy, Math, or Computer Science).

Prerequisite(s): Students may not register for this class if they have already received credit for AS.020.616 OR AS.020.334 OR AS.171.333 OR AS.171.699 OR AS.270.335 OR AS.360.339.

Distribution Area: Natural Sciences

Islamic Studies**AS.194.256. Museums, Communities, and the Sacred. 3 Credits.**

This community-engaged course is co-created by a scholar and curator with expertise in religion, art, and material culture, and taught in partnership with the Baltimore Museum of Art (BMA), and centers how museums engage with the sacred. Recognizing that museums have traditionally been under-equipped to respond to the social concerns that animate their local communities, the BMA is rethinking how a twenty-first century civic museum engages the city in which it is located. Understanding the museum as a public space in which contemporary civic and social issues can be engaged, we will explore such questions as: how can a museum represent devotional objects while honoring a diversity of religious and spiritual perspectives and avoiding homogenous narratives about belief? How can a museum create relationships with religious communities to understand and interpret the objects in its collection, and navigate differences in faith-based communities with ethical care? How can a museum engage local communities in the process of writing labels for objects and in other acts of interpretation in a way that is not extractive and is genuinely value-aligned? In short, how can a museum truly become public? As a community-engaged course, students will build practically on their learning about museums, religion and public pedagogy to create and facilitate community listening circles at the BMA. The course will include visits to the BMA and other sites, guest visits on focused topics from museum professionals in other institutions, and training in listening and facilitation.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Culture and Aesthetics (FA3)

EN Foundational Abilities: Creative Expression (FA3)

Mechanical Engineering**EN.530.637. Energy Meteorology. 3 Credits.**

Renewable energy is growing rapidly in the United States and around the world to provide sustainably-generated electricity, and many renewable energy generators are influenced by the weather. Transmission and power demand are also vulnerable to weather. Traditional energy sources also interact with weather. By studying interactions between the atmosphere and energy generators, transmission lines, and demand centers, we gain an understanding of processes that shape local weather and climate worldwide. In-class activities and weekly homework assignments give you opportunities to work with real-world data as you would at an energy development company. Weekly quizzes challenge your specialist vocabulary and scientific understanding. Presentations on papers and class projects (graduate students) enable you to develop and exercise important scientific communication skills. Several guest speakers will share their insights of the renewable and traditional energy industries.

Medicine, Science and the Humanities**AS.145.320. British Visual Culture and Medicine. 3 Credits.**

In this class, we will reflect on the ethical, gendered, and societal implications of the creation and exchange of British medical imagery. What purpose did this visual culture serve for artists, practitioners, and patients? How are we meant to look at these images today, outside of their original contexts? We will examine a range of images and objects from Britain, expanding our definition of "art" and interrogating the colonialist roots and origins of artistic and medical material. Our objects of study will extend from oil paintings of renowned physicians to diagnostic photographs of unnamed patients and from prints of gynecological dissection to satirical cartoons of "quack" doctors. We will look not only at how practitioners have had their patients depicted, but also at how those with illnesses or with disabilities have taken back their bodily power to portray themselves. Questions of portraiture, likeness, and consent will be constant themes throughout this course, guiding students' development of ways of thinking critically and writing thoughtfully about medical images.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1)

Writing Intensive

AS.145.410. Black Land & Food Sovereignty Practicum: An Environmental Justice Studio. 3 Credits.

This project-based course will provide training and skills in movement building through radical analyses of and approaches toward the state of food and food systems. The course immerses budding movement contributors in a theory- and practice-based experience. Students will engage in guided projects that support the movement toward freedom and self-determination through land and food. The course is co-taught by author, organizer, educator, and filmmaker Eric Jackson (Black Yield Institute) and anthropologist Nicole Labruto (Johns Hopkins University). Black Yield Institute (BYI) is a Pan-African power institution based in Baltimore, serving as a think tank and collective action network that addresses food apartheid. Participants will learn new research and design skills, contribute to projects relevant to BYI's work, develop a critical analysis, and build relationships that will prepare them for growth in movement toward Black land and food sovereignty. The course builds on AS.145.400 Black Land & Food Sovereignty Praxis: An Environmental Justice Workshop, though the course is not a prerequisite. Open to undergraduate and graduate students. Class sessions will take place each week in Cherry Hill in south Baltimore. Meeting times include transportation to and from the Homewood campus. Admission by permission of instructors.

AS Foundational Abilities: Citizens and Society (FA4), Ethics and Foundations (FA5)

EN Foundational Abilities: Engagement with Society (FA4)

Modern Languages and Literatures

AS.211.224. *Made in Italy: Italian style in context.* 3 Credits.

Italy and the “Italian style” have become synonym of exquisite taste, class, and elegance thanks to the quality of Italian craftsmanship. This course will explore some of the major factors that contributed to the rise of Italian fashion and Italian industrial design as iconic all around the world. The classes will focus on the main protagonists and art movements that influenced the development of Italian style. We will analyze trends, clothing, and style not only in a historical context, but also through a critical apparatus that will include themes related to gender, culture, power, and politics. The course is taught in English. No knowledge of Italian is required, but those who can read in Italian will have an opportunity to do so. Everyone will learn some Italian words and expressions.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

AS.211.231. *Planet Amazonia: Culture, History, and the Environment.* 3 Credits.

Without Amazonia, global warming could reach levels that threaten life on the planet. Yet, in an era of deforestation and climate change, Amazonia itself might be on the verge of disappearance, with disastrous consequences for the world. This course proposes interdisciplinary perspectives on Amazonia through a range of works drawn from history, anthropology, archeology, environmental studies, literature, and the arts. We'll look at texts by European travelers and missionaries who contributed to the paradoxical image of Amazonia as a “virgin paradise” or a “green hell”; scientific studies and artists' depictions of the region's flora and fauna; the often-overlooked history of human occupation of the region; and projects to colonize, develop, or conserve the world's largest tropical forest. What importance does Amazonia hold for Latin American and global geopolitics? How do art and literature, including indigenous writings, create, reinforce, or deconstruct clichés about the region? What alternative futures for our planet can Amazonia help us to imagine?

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

AS.211.315. *The Meanings of Monuments: From the Tower of Babel to Robert E. Lee.* 3 Credits.

As is clear from current events and debates surrounding monuments to the Confederacy, monuments play an outsize role in the public negotiation of history and identity and the creation of communal forms of memory. We will study the traditions of monuments and monumentality around the world – including statues and buildings along with alternative forms of monumentality – from antiquity to the present day. We will examine the ways that monuments have been favored methods for the powerful to signal identity and authorize history. This course will also explore the phenomenon of “counter-monumentality”, whereby monuments are transformed and infused with new meaning. These kinds of monuments can be mediums of expression and commemoration for minority and diaspora communities and other groups outside the economic and political systems that endow and erect traditional public monuments. The first half of the course will examine the theoretical framework of monumentality, with a focus on ancient monuments from the ancient Near East (e.g., Solomon's temple). More contemporary examples will be explored in the second half of the course through lectures and also field trips. We will view contemporary debates around monuments in America in light of the long history of monuments and in comparison with global examples of monuments and counter-monuments. All readings in English.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

AS.211.329. *Museums and Identity.* 3 Credits.

The museum boom of the last half-century has centered largely around museums dedicated to the culture and history of identity groups, including national, ethnic, religious, and minority groups. In this course we will examine such museums and consider their long history through a comparison of the theory and practice of Jewish museums with other identity museums. We will study the various museological traditions that engage identity, including the collection of art and antiquities, ethnographic exhibitions, history museums, heritage museums, art museums, and other museums of culture. Some of the questions we will ask include: what are museums for and who are they for? how do museums shape identity? and how do the various types of museums relate to one another? Our primary work will be to examine a variety of contemporary examples around the world with visits to local museums including the Jewish Museum of Maryland, the National Museum of African American History and Culture and the National Museum of the American Indian.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4), Democracy (FA4.1)

AS.211.365. Environmental Justice. 3 Credits.

This class will explore the intersections of environmental and social justice issues through an analysis of literary fiction, documentaries and films, art, media, and archival materials. We will study how environmental issues are deeply connected with issues of race, class, gender, ethnicity, and the legacies of colonialism. We will pay close attention to the tensions encountered by notions such as environmentalism of the poor and the disparities that arise from a comparative and historical perspective Global South vis-à-vis Global North, and within the North, among the most vulnerable communities. We will consider the generative potential of storytelling and the arts for imagining an alternative socioeconomic and culture paradigm predicated on environmental sustainability and economic and social equity. This class is profoundly interdisciplinary, bringing together knowledge from all parts of students' life. By the end of this course, students will see many connections between literary and cultural studies, environmental ethics, social justice, and civic engagement.

Distribution Area: Humanities

AS Foundational Abilities: Citizens and Society (FA4), Ethics and Foundations (FA5)

EN Foundational Abilities: Engagement with Society (FA4)

AS.211.424. Climate Change Narratives. 3 Credits.

In *The Great Derangement* Indian novelist Amitav Ghosh writes that "the climate crisis is also a crisis of culture, and thus of imagination." Worldwide, climate and environmental change is stirring the imaginary of novelists, filmmakers, and artists who are finding ways to frame, emplot, or even perform, an unmanageable phenomenon like climate change. How is climate change shaping new modes of storytelling and aesthetics? How do film, literature, and environmentally conscious art transform our perception of the world we inhabit and its unpredictable changes? Can climate change narratives help us to imagine futures of possibilities, maybe dystopian, uncertain, or even happy, but futures nonetheless? This multimedia course explores, through a transnational perspective, a variety of contemporary novels, films, and other media that attempt answer these questions.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Democracy (FA4.1), Ethics and Foundations (FA5)

EN Foundational Abilities: Creative Expression (FA3)

AS.212.426. Penser l'Animal de l'Ancien Régime à la Belle Epoque. 3 Credits.

This seminar explores the history of thinking about non-human and human animals in France from the late sixteenth through the late nineteenth centuries. Topics to be explored include non-human sentience, interspecies relations, animals and industrialization, and the emergence of anti-cruelty laws. Taught in French.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

AS.213.332. Literature and the Visual Arts. 3 Credits.

Literature and the Visual Arts is devoted to exploring the resonances between literary and visual forms of artistic expression and their enrichment of the modernist cultural landscape. We will aim to understand how the interest in visual art by modernist writers, and the impressions of literature on modernist and contemporary artworks newly illuminate or challenge traditional aesthetics of the temporality and spatiality of the work, aesthetic judgment, and the phenomenology of aesthetic attention. Readings may include works of literature or aesthetics by Immanuel Kant, Rainer Maria Rilke, Paul Klee, Stefan Zweig, Martin Heidegger, Charles Baudelaire, Walter Benjamin, Maurice Merleau-Ponty, Siegfried Lenz, and Virginia Woolf, alongside work of many visual artists from van Gogh and Cézanne to German Expressionism and Anselm Kiefer. Taught in English.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Ethics and Foundations (FA5)

Writing Intensive

AS.213.363. Environmental Humanities. 3 Credits.

This course considers the importance of philosophical, literary, aesthetic, and other humanist approaches to ecology and environmental issues.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Ethics and Foundations (FA5)

EN Foundational Abilities: Creative Expression (FA3)

Writing Intensive

AS.217.425. Latin American Ecocriticism. 3 Credits.

Increased awareness of climate change has led to a shift in the way we address and intervene in environmental issues in the new millennium. Yet the interest in making sense of the environment has a long history in literature and the arts. How have Latin American writers and artists understood and depicted their environments and environmental questions? How do the form and content of texts and cultural artifacts influence our understanding of the non-human world? Can works of fiction shape ecological transformations? In this course we will discuss texts from the early colonial period to the present, including the literary works of Graciliano Ramos, Horacio Quiroga, and Clarice Lispector; political ecology; film; Ana Mendieta's earth-body art; contemporary experiments in bio-art; postcolonial theory; and the intersection of environmental justice with such topics as nationalism and human rights. Going beyond ecocriticism's original focus on the Anglo-American world, we will engage recent scholarship on Latin America that sheds light on the region's cultural and geopolitical importance to the global climate, with particular attention to Brazil. This course aims to introduce students to current debates in Latin American Ecocriticism and the Anthropocene and thus contribute to an incipient but expanding field.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4), Democracy (FA4.1)

Near Eastern Studies

AS.130.153. A (Virtual) Visit to the Louvre Museum: Introduction to the Material Culture of Ancient Egypt. 3 Credits.

This course will present the Egyptological collections of the musée du Louvre in Paris, room by room, as in a real visit. From the Predynastic period, in the 4th millennium BC, to Roman time, the iconic “masterpieces” of this world-renowned art museum, as well as its little-known artifacts, will allow us to explore the history and material culture of ancient Egypt. We will also learn to observe, describe and analyze archaeological objects, in a global manner and without establishing a hierarchy between them, while questioning their place in the museum and its particular language. The objective will be to go beyond the objects themselves and answer, in fine, the following questions: What do these objects tell us about the men and women who produced them, exchanged them, used them, and lived among them in antiquity? What do they also reveal about those who discovered them in Egypt, several millennia later, about those who collected them and sometimes traded them, and what does this say about the relations between Egypt and the Western countries over time? The course will be complemented by one visit to the Johns Hopkins Archaeological Museum and one visit to the Walters Art Museum.

Distribution Area: Humanities

AS.130.245. The Archaeology of Gender in the Ancient Eastern Mediterranean. 3 Credits.

How do art historians and archaeologists recover and study genders and sexualities of ancient people? This writing-intensive seminar looks at texts and objects from ancient Egypt, Assyria, and Greece through the lens of gender and sexuality studies. Beyond exploring concepts of gender in the ancient Eastern Mediterranean, students will also consider how modern scholars have approached, recovered, and written about ancient gender identities. There are no prerequisites for this course.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1)

Writing Intensive

AS.130.378. Geoarchaeology: Applications of Earth Science to Archaeology. 3 Credits.

Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleo-environmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.

Distribution Area: Natural Sciences, Social and Behavioral Sciences

AS Foundational Abilities: Science and Data (FA2), Citizens and Society (FA4)

AS.130.420. Research Methods: Arts of the Mesopotamian World: Crafters & Consumers. 3 Credits.

This hybrid seminar examines in depth a series of artistic case studies over a 3000 year period in the region of what is today Iraq, Syria, and southeastern Turkey, from c. 3500-500 BCE. Discussion will focus on processes of making and contexts of using myriad forms of art and architecture. Topics will include the invention of writing and complex imagery; portraiture and ritual practice; the symbolic value of materials; visual narration; and the uses of space for expressive purposes. We will approach these and other topics through critical engagement with existing scholarship, as well as by direct study of objects in nearby museum collections.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Projects and Methods (FA6)

Writing Intensive

AS.131.678. Geoarchaeology: Applications of Earth Science to Archaeology. 3 Credits.

Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleo-environmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.

Distribution Area: Natural Sciences, Social and Behavioral Sciences

AS.132.609. Research Methods: Arts of the Mesopotamian World: Crafters & Consumers. 3 Credits.

This hybrid seminar examines in depth a series of artistic case studies over a 3000 year period in the region of what is today Iraq, Syria, and southeastern Turkey, from c. 3500-500 BCE. Discussion will focus on processes of making and contexts of using myriad forms of art and architecture. Topics will include the invention of writing and complex imagery; portraiture and ritual practice; the symbolic value of materials; visual narration; and the uses of space for expressive purposes. We will approach these and other topics through critical engagement with existing scholarship, as well as by direct study of objects in nearby museum collections.

Distribution Area: Humanities

Writing Intensive

AS.133.418. Egyptian Art & Material Culture: Principles, Materiality and Challenges. 3 Credits.

This course is dedicated to the study of the art and material culture of ancient Egypt, spanning from the 5th millennium BCE to the Roman period. The objective of the course is to provide students with a comprehensive understanding of Egyptian art, with a focus on materiality, effective methods of description and analysis, and a command of bibliography. It will also enable students to practice two fundamental aspects of their future professional life: presenting a paper at a conference and submitting an article to an academic journal. In the initial sessions, we will examine the fundamental principles and conventions that define Egyptian art. We will then investigate the natural resources available to Egyptian craftsmen and artists, including nature, origin, networks, and uses. We will analyze the production of works of art through several case studies, focusing on materiality. Finally, we will reflect on the presence of Egyptian works of art in museums around the world. Moreover, the course will provide an opportunity for discourse on professional matters pertaining to engagement with Egyptian antiquities and works of art. The course will be structured around: lectures by the professor or by guest researchers, with the students participating in a dialogue with the lecturers; sessions dedicated to discussions of articles to be read (with two/three articles per session); oral presentations by the students, with the aim of reproducing the conditions of a colloquium or conference. These will include formal presentations and question-and-answer sessions, with all students taking part. At the conclusion of the semester, students will be required to submit a paper in connection with the oral presentation they have prepared. This paper will be presented as a scientific article, and the instructor will evaluate it in the same manner as an anonymous referee.

Distribution Area: Humanities

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3)

EN Foundational Abilities: Creative Expression (FA3)

AS.133.618. Egyptian Art & Material Culture: Principles, Materiality, and Challenges. 3 Credits.

This course is dedicated to the study of the art and material culture of ancient Egypt, spanning from the 5th millennium BCE to the Roman period. The objective of the course is to provide students with a comprehensive understanding of Egyptian art, with a focus on materiality, effective methods of description and analysis, and a command of bibliography. It will also enable students to practice two fundamental aspects of their future professional life: presenting a paper at a conference and submitting an article to an academic journal. In the initial sessions, we will examine the fundamental principles and conventions that define Egyptian art. We will then investigate the natural resources available to Egyptian craftsmen and artists, including nature, origin, networks, and uses. We will analyze the production of works of art through several case studies, focusing on materiality. Finally, we will reflect on the presence of Egyptian works of art in museums around the world. Moreover, the course will provide an opportunity for discourse on professional matters pertaining to engagement with Egyptian antiquities and works of art. The course will be structured around: lectures by the professor or by guest researchers, with the students participating in a dialogue with the lecturers; sessions dedicated to discussions of articles to be read (with two/three articles per session); oral presentations by the students, with the aim of reproducing the conditions of a colloquium or conference. These will include formal presentations and question-and-answer sessions, with all students taking part. At the conclusion of the semester, students will be required to submit a paper in connection with the oral presentation they have prepared. This paper will be presented as a scientific article, and the instructor will evaluate it in the same manner as an anonymous referee. Restricted to: Near Eastern Studies, Museum Studies, History of Art, or Archaeology students.

Distribution Area: Humanities

Physics & Astronomy**AS.171.671. Advanced Topics in Astrobiology. 3 Credits.**

This is an advanced course discussing mainstream and frontier topics in the five areas of: 1. Cosmology and galaxy, star, black hole and planet formation. 2. Discussions on the astrophysics of (exo-)planets including atmospheres, non-equilibrium atmospheres and biosignatures. 3. Future missions including the Habitable Worlds Observatory. 4. The hazards of space flight and how to overcome them 5. Significant existential questions for life's continuance over the vast timeline of the Universe.

Distribution Area: Natural Sciences

AS Foundational Abilities: Science and Data (FA2)

Program in Museums and Society**AS.389.201. Introduction to the Museum: Past and Present. 3 Credits.**

This course surveys museums, from their origins to their most contemporary forms, in the context of broader historical, intellectual, and cultural trends including the social movements of the 20th century. Anthropology, art, history, and science museums are considered.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Writing and Communication (FA1), Citizens and Society (FA4)

EN Foundational Abilities: Engagement with Society (FA4)

Writing Intensive

AS.389.233. Exhibiting Cultures. 3 Credits.

This course critically examines the role of exhibitions in shaping cultural narratives and public understanding of people and places across the globe. Students will explore the history, theory, and practice of exhibiting cultures in museums, galleries, and digital platforms. Topics include curatorial ethics, representation and identity, postcolonial critiques, audience engagement, and the impact of emerging technologies on exhibition design. Through case studies and hands-on projects, students will analyze how cultural heritage is displayed and interpreted, considering issues of appropriation, authenticity, and inclusivity. The course culminates in a final project where students conceptualize and design their own cultural exhibition proposal.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Culture and Aesthetics (FA3), Ethics and Foundations (FA5)

AS.389.260. Cultural Heritage in Crisis. 3 Credits.

We explore the possible futures of cultural heritage and museums in times of accelerating climate change, pandemics, armed conflict and political and social turmoil by examining past and contemporary events.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Citizens and Society (FA4), Ethics and Foundations (FA5)

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3 Credits.

What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

AS.389.322. Tigers to Teapots: Collecting, Cataloging, and Hoarding in America. 3 Credits.

This course examines material culture through the lens of personal collecting. Focusing on the United States, students will explore how collectors influenced the holdings of the nation's museums, including JHU's Evergreen and Homewood Museum, and contemplate how collecting, for public and private purposes, shapes status and taste in America. This course will also address how collections are organized, displayed, and conserved and will delve into psychological and environmental aspects of collecting and hoarding.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Citizens and Society (FA4), Projects and Methods (FA6)

EN Foundational Abilities: Engagement with Society (FA4)

AS.389.341. Museum Education for Today's Audiences. 3 Credits.

Go behind the scenes of the Baltimore Museum of Art's Education Department and develop and implement programs for college students in conjunction with an exhibition about women and art in early modern Europe.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Writing and Communication (FA1), Citizens and Society (FA4), Projects and Methods (FA6)

EN Foundational Abilities: Engagement with Society (FA4)

Writing Intensive

AS.389.405. Visualizing Africa. 3 Credits.

Examines the history of African art in the Euro-American world, focusing on the ways that Western institutions have used African artworks to construct narratives about Africa and its billion residents.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Writing and Communication (FA1), Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Writing Intensive

AS.389.420. Curatorial Seminar: European Art. 3 Credits.

Working in collaboration with staff from the Baltimore Museum of Art, students assess the opportunities and challenges of the European collections; research select objects; contribute to the department's collections development plan; and conceptualize new, more global and more inclusive approaches to the displays.

Distribution Area: Humanities, Social and Behavioral Sciences

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Public Health Studies**AS.280.478. Communicating Climate Change: Creative Approaches for Action. 3 Credits.**

Effective communication is imperative in reaching time-sensitive goals in reducing the effects of climate change. Using the framework of persuasive communication and behavior change theory, the course will provide a practice-based opportunity for students to apply their knowledge to develop their own climate communication campaigns.

Students will gain familiarity with issues in historical approaches of climate approaches, understand audiences navigating climate misinformation, and social and behavioral theories of change, with an emphasis on arts-based approaches to climate communication. Through lectures, seminars, screenings, and workshops, the course will culminate with an applied assignment of students' original creative climate communication pieces. This is a Gordis Teaching Fellowship course and instructor approval is required. All students interested are encouraged to request approval; those with a public health background will be strongly considered for approval.

Distribution Area: Social and Behavioral Sciences

AS Foundational Abilities: Culture and Aesthetics (FA3), Citizens and Society (FA4)

EN Foundational Abilities: Creative Expression (FA3), Engagement with Society (FA4)

Systems Engineering**EN.645.651. Integrating Humans and Technology. 3 Credits.**

This class provides a hands-on introduction to human and cognitive systems engineering. Students will learn and apply user-centered research and innovation methods that are used to discover, document and integrate human capabilities, limitations and needs into the systems engineering process, improving the likelihood that the resulting systems are intuitive, efficient, effective and useful. Topics include needs elicitation, workflow analysis, functional allocation, decision making, prototyping, and performance measurement.

Prerequisite(s): EN.645.662 Introduction to Systems Engineering
OR EN.655.662 Introduction to Healthcare Systems Engineering OR
EN.675.600 Systems Engineering for Space

Theatre Arts & Studies

AS.225.250. Elements of Theatrical Design. 3 Credits.

Students will survey theatrical design through various projects. We will develop moments based on sound, costume, space, and light, focusing on how these elements help to tell a story. Students will develop artistic statements and arguments that justify their creative choices, while practicing constructive criticism in an environment that encourages exploration and play.

Distribution Area: Humanities

AS Foundational Abilities: Culture and Aesthetics (FA3), Projects and Methods (FA6)

EN Foundational Abilities: Creative Expression (FA3)

For current faculty and contact information go to <http://www.jhu.edu/artwork/faculty.htm>