WSOA Minors

A WSOA Minor provides students an opportunity to expand their range of knowledge and skill in a field that's complimentary to their major and to differentiate their degree from candidates who graduate from other institutions.

Minors

Applied Computer Science Media Arts

Computer Science Design Computation*

Construction Management

Interior Design

Sustainable Practices

*Computer Science Design Computation will become an official minor in 2023.

Applied Computer Science
Media Arts

Overview

The Applied Computer Science program helps students become designers, thinkers, and leaders of the digital age. It is a hybrid art-and-technology degree that offers opportunities for students to focus on emerging digital practices by working with virtual and immersive environments, experiential design, and human-computer interaction. The program uses computer science as a tool to innovate within the fields of design, entertainment, and digital arts. This STEM degree enables students to develop into creators and innovators, preparing them for some of the most exciting and cutting-edge careers of today and tomorrow.

Students become proficient in technical skills but also benefit from a strong emphasis on design, enabling them to explore new forms of media within social and cultural contexts. Applied Computer Science students develop a broad skill set by working with virtual (VR) and augmented (AR) reality environments, computer graphics, digital media, web development, mobile platforms, electronics, 3-D modeling, digital fabrication, and more.

Minor Requirements

course no.	course name	units	pre-req
CSMA 100	ACS Lecture Series	1	none
CORE 101	Computer Science 1	3	none
ARTH 206	History of Electronic Media	3	none
CSMA 112	Interactive Prototyping	3	none
CSMA 212	Media Environments	3	none
*one of the following:			
CSMA 113	Mixed Reality	3	none
CSMA 202	Media Programming 1	3	CORE 101
CSMA 213	Artificial Intelligence for Media	3	CORE 101

Contact

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CSMA 100: ACS Lecture Series
The Applied Computer Science Lecture Series features practitioners from a wide range of creative and scientific fields, all of whom incorporate technology at the core of their professional inquiry. Open to the entire Woodbury community, this course aims to foster dialogue around the increasing role of technology in society; its application across a diverse range of professional practices; the resulting explosion of creative and expressive modes of production; and the ethical and moral dilemmas that have emerged as technology has evolved. Each week, the students will be given four questions to answer after participating in the lecture. This weekly practice will enable them to learn how to engage in a discussion with each lecturer, as well as reflect on various research methodologies and fields.

CORE 101: Computer Science 1
This class provides a foundation in computational literacy, allowing students from a variety of disciplines to read, write, and interpret code. The course will inform through assigned readings, lectures, and workshops that programming is not only technical skill but an essential form of literacy. It serves as a standalone course for those seeking to understand the basics of programming. The course structure is based on the “creative coding” model in which students work with programming languages to produce interactive graphics beginning on the first day of class. Principles such as conditional statements, Boolean operations, loops, functions, and classes will be covered in an applied manner, allowing students to tie the syntax and semantics of code to real-time graphics.

ARTH 206: History of Electronic Media
This seminar ties together major themes and movements in the history of the arts, science, and technology up to the present day, and will explore the influence of electronic media on contemporary artistic practice from the 1960s. Students will examine a wide array of new media, including electronics, robotics, video games, the web, and virtual reality, and will learn to identify major technological and artistic innovations that often drive disruptive societal change. Throughout the semester, students will complete regular writing assignments and presentations, culminating in a research paper.

CSMA 112: Interactive Prototyping
A hands-on introduction to the design and creation of interactive prototypes that form the basis of intelligent objects and spaces in the sphere of media, art and design, architecture, wearable technology, and IoT (Internet of Things). In the course of the semester, students will acquire practical electronics and embedded programming skills by experimenting with technologies such as microprocessors, sensors, actuators, and LED lights, using them in conjunction with the software tools, source code libraries, and network services facilitating their applications. Class sessions will focus on the design and construction of electronic circuits used to explore real-time interaction. Students will complete regular programming assignments, culminating in a collaborative installation project that integrates the hardware and software technologies, concepts, and programming techniques covered in the course.

CSMA 212: Media Environments
This experimental studio covers the recent techniques, aesthetics, and applications of experiential design, with a focus on interactive and immersive environments at a human scale. It is a hands-on hybrid art-and technology course that will cover topics such as the design of real-time generated graphics, audio-reactive visuals, projection mapping, programming interactive installations, and other creative prototyping tools.

CSMA 113: Mixed Reality
This class will explore various platforms for the design and creation of AR and VR applications. Emphasizing hands-on experimentation, this experiential studio is meant to be a collaboration between programmers and designers to research and develop new paradigms for user experience and new pipelines for the creation of 3-D content. Using the Unity game engine and Applied Computer Science 2021-2022 Course Catalog 30 various hardware equipment, such as the Microsoft HoloLens, HTC Vive, and mobile devices, students will work individually and in teams to practically apply novel design principles, culminating in a semester project demonstrating a critical approach to designing for these emerging forms of media.

CSMA 202: Media Programming 1
This course introduces intermediate programming concepts through the construction of interactive experiences for the web by building on programming fundamentals learned in the introductory programming course. Students will learn software design patterns, synchronous and asynchronous programming, unit testing, version control, hosting, data formats, and how to work with an application programming interface (API). Students will create interactive works using a variety of back-end and front-end technologies. Possible projects include interactive data visualization, networked games, and responsive design.

CSMA 213: Artificial Intelligence for Media
This course explores the principles of Artificial Intelligence focusing on the development and deployment of machine learning algorithms. Lectures and reading assignments for the class aim to provide a broad overview of contemporary research, best practices, and applications in the fields of robotics, data analytics, audio analysis, computer vision, and other areas. Practical approaches to engaging with the subject material will be emphasized through hands-on programming assignments and exercises, including applications of machine learning at the hardware level using sensors and embedding computing platforms. Employing state-of-the-art software frameworks with a creative approach to problem-solving, students will understand core concepts involved in machine learning to begin developing expertise with intelligent algorithms, neural networks, training data sets, and more.

Design Computation

Overview

Computation is an essential part of everyday life. It mediates our social interactions and our news, and it is embedded in many of the physical objects that we interact with. In this environment, design requires the use and understanding of computation. The Design Computation program develops computational literacy as essential to a broad multidisciplinary undergraduate education. Computational literacy is created through both technical and critical frameworks.

Students in the program will gain fluency in programming languages, software, and hardware. This fluency enables the design of objects, software, and spaces at multiple scales of the built environment. It also enables the critical evaluation of the biases and values embedded within specific software and languages. Graduates of the program will be versed in contemporary software, programming, robotics, and digital fabrication.

Minor Requirements for SoA Majors

course no.	course name	units	pre-req
CSMA 100	ACS Lecture Series	1	none
CORE 101	Computer Science 1	3	none
CSDC 111	Technology & Making 1: Intro to Design Computation	3	none
CSDC 212	Technology & Making 2: Fabrication & Design Computation	3	none
CSDC 301	History & Theory	3	WRIT 113 & LSCI 105
*one of the following:			
CSDC 314	Technology & Making 4: Architecture & Robotics	3	CSDC 111 or CSDC 212
CSDC 320	Design Computation Studio 1: Programming for Architecture	3	CSDC 111 or CSDC 212
CSDC 415	Technology & Making 5: Building Information Modeling	3	CSDC 111 or CSDC 212

Minor Requirements for Non-SoA Majors

CSMA 100	ACS Lecture Series	1	none
CORE 101	Computer Science 1	3	none
CSDC 111	Technology & Making 1: Intro to Design Computation	3	none
CSDC 212	Technology & Making 2: Fabrication & Design Computation	3	none
CSDC 301	History & Theory	3	WRIT 113 & LSCI 105
CSDC 320	Design Computation Studio 1: Programming for Architecture	3	CSDC 111 or CSDC 212

Contact

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CSMA 100: ACS Lecture Series
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CSDC 111: Technology & Making 1
This course will introduce students to the fundamental principles of design with computational tools. The class will ask students to design a computational model in the pursuit of a specific design problem. The potential of computational tools to enable and structure the design process through both iterative and variant-based design strategies will be explored. Types of representation such as axonometry, orthography, and perspective will be examined in both renderings and line-based representations.

CSDC 212: Technology & Making 2
This course will introduce students to the fabrication of objects through the use of computational tools. The class will ask students to develop a computational model that generates a series of fabrication-ready digital files. Issues of material tolerance, nesting, connections, and hybrid modes of fabrication will be explored in the model. In addition to the digital portion of the class, a hands-on approach to digital fabrication will require students to use a variety of digital and conventional tools within Woodbury University’s making complex.

CSDC 301: History & Theory
This course will provide students with a broad historical context for contemporary computational design. Focusing on the relationship between technical systems, social systems, and aesthetic experimentation, it starts by examining design’s relationship to engineering and social sciences in the nineteenth and early twentieth centuries and ends with the introduction of computation to aesthetic production during the late 1950s through the 1980s. This course will help students ground their work in design studios and technical seminars in a historically-informed understanding of their chosen field of study. Instruction will be provided through short lectures and seminar discussions based on assigned readings from key texts that shaped the field. Assignments will include short-form writing and a term paper. Since text and writing play an important role in the development of computational aesthetics, students will be introduced to computational writing techniques as a way of generating ideas.

CSDC 314: Technology & Making 4
This course will offer a focused study of robotics. Students will learn the general principles of robotic interface, setup, tooling, and programming. At the core of the class will be the design and production of an object enabled by the use of robotics.

CSDC 320: Design Computation Studio 1
This course is the first studio in the design sequence. It allows students to apply their practical and theoretical knowledge to the design of a single object, assembly, or system according to parametric principles. Students will be asked to articulate their intention, sketch a workflow, and document their process. By the end, students will have learned some of the fundamental organizational principles of architectural design, how to apply custom scripts to a parametric model and describe the results through drawings, fabricated models or prototypes, and a written specification, and understand the importance of collaborative workflows

CSDC 415: Technology & Making 5
This course will introduce students to Building Information Modeling (BIM), the architecture and engineering industry standard for design documentation. Students will learn to build, manage, and troubleshoot BIM models. In addition, students will learn to use both visual scripting and text-based scripting interfaces to control and generate BIM models.

Interior Design

Overview

The Interior Design Program explores how the physical and emotional human experience merge to inspire interior spaces infused with aesthetic and cultural relevance. Using three-dimensional models, computer rendering, virtual reality, and graphic representation, students explore various disciplines that collectively comprise interior design. Students gain expertise in developing the essential elements of interior design, such as form, color, light, finishes, and furnishings, along with appropriate building technology, material science, and ergonimic principles to create spatial compositions.

The Interior Design Program integrates human factors with professional knowledge and interdisciplinary collaboration toward global relevance, sustainable benefits and social equity. In a landscape of rapidly changing technologies and ideas, this program provides students with the professional and intellectual tools necessary to negotiate the complexities of the built environment domain.

Minor Requirements for BArch Majors

course no.	course name	units	pre-req
FOUN 106	Color Theory and Interaction	3	none
IDES 256	Materials and Furnishings	3	none
IDES 259	Tectonics 1: Material Logic	3	none
IDES 328	Tectonics 2: Detail Design	3	none
IDES 365	Lighting Design	2	none
IDES 469	Human Wellbeing	1	none

Minor Requirements for Non-Architecture Majors

IDES 105	Design Studio 1: Space	3	none
IDES 114	Design Communication 1	3	none
FOUN 106	Color Theory and Interaction	3	none
IDES 256	Materials and Furnishings	3	none
IDES 259	Tectonics 1: Material Logic	3	none

Contact

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FOUN 106: Color Theory and Interaction
This course investigates the principles, properties, and interactions of color as well as the cultural and psychological implications of color across disciplines. A variety of media and sources are introduced through weekly exercises. Students will develop a working knowledge of additive and subtractive color systems, color mixing, and approaches to color harmony, as well as an understanding of practical issues, such as color matching, correction, and forecasting. Design thinking as it applies to visual communication is also considered in this course as an agent for mindfulness and engagement.

IDES 105: Design Studio 1: Space
As an introductory course in three-dimensional design, emphasis is placed on developing skills necessary for visualization, representation, and creation of three-dimensional forms. Through descriptive geometry, orthographic projection, axonometrics, and model building, students examine plane, mass, and volume as space-defining elements.

IDES 114: Design Communication 1
This course introduces various drawing skills used in two- and three-dimensional methods and mediums of representation. Methods of perception, technique, composition, critical evaluation, and presentation are studied through representational assignments. Emphasis is placed on orthographic projection and documentation, and on constructed hardline drawing techniques. Students learn these methods of representation using both digital and analog drawing skills and media.

IDES 256: Materials and Furnishings
Applied finishes and specifications for interior architectural elements, furniture, fixtures, and textiles are examined through a comprehensive project. Materials, manufacturing processes, application of mass-produced furniture and surface materials, methods of detailing, construction, fabrication, and the application of materials in custom elements are studied. Estimating and installation are introduced. Emphasis on commercial and institutional applications.

IDES 259: Tectonics 1: Material Logic
This course provides a studio-based exploration of the impact of materiality and fabrication in both the generation and reading of form and space. This will be addressed through readings, discussions, exercises, and design/build projects. Issues of craft and technique as they affect the design process will be addressed in both two- and three-dimensions. An intuitive knowledge of material properties and processes will be gained through full-scale hands-on exploration. Detailing, construction, and fabrication methods, and the application of materials in custom elements are studied through individual or group projects closely related to the body in scale or use. Formal, conceptual, and programmatic solutions are studied through a specific design strategy/process as assigned by the instructor, with an emphasis on new or hybrid programs/functions.

IDES 328: Tectonics 2: Detail Design
This course studies materials and methods of detailing, fabrication, documentation, and specification for custom work. Emphasis is placed on detailing as a design process. Students learn detailing techniques through research, observation, and architectural documentation of non-structural elements of contemporary or modern design. Elements observed and documented may range from furniture and interior casework, to non-structural exterior building elements (custom screens, trellises, etc.). Materials and their integration, application, and/ or connections are emphasized. Students are directed through research, conceptual design/diagramming, schematic design, and design development to the final production of a comprehensive project documenting design resolutions of a given project through detailed technical drawings and models.

IDES 365: Lighting Design
This course is an introduction to the basic design and technical requirements of lighting systems.

IDES 469: Human Wellbeing
Human health and wellbeing are impacted by interior design. This course analyzes and applies strategies for light and color, products and materials, as well as acoustics, thermal comfort, and indoor air quality in order to improve human wellbeing.

Construction Management

Overview

The mission of the Construction Management program is to transform the built environment by building sustainably. Students integrate design, technology, business analytics, and executive skills with sustainability and the liberal arts, using experiential, hands-on learning to advance as agile, future-ready leaders and entrepreneurs in the developer, construction, and design-related industries.

Minor Requirements

course no.	course name	units	pre-req
DCMG 204	Constructin Mngmt. and Contract Administration	3	
DCMG 208	Sustainable Construction	3	
DCMG 402	Entrepreneurship and Mngmt. Theory	3	
DCMG 404	Construction Mngmt. Law, Ethics	3	WRIT 113 and LSCI 1XX
*one of the following:			
SUPR 110	Intro. to Environmental Policy and Mngmt.	3	
DCMG 405	Construction Material: Testing and Inspection	3	
DCMG 401	Design Studio 4: Build for the Community	6	Design Studio 3

Contact

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DCMG 204: Constrution Mngmt. and Contract Admin
How to navigate management software, contract documents, construction budgets and cost data, construction schedules, and stakeholder management is central to the course. Students learn the precepts of sound contract negotiations and administration and employ systems thinking through the study of systems engineering. The need to manage projects holistically to avoid cost and time overruns is emphasized.

DCMG 208: Sustainable Construction
Sustainable technologies in the construction industry are explored with an emphasis on regenerative design. Students gain a deeper understanding of sustainable production processes and methodologies such as prefab/modular construction and 3D technology and the possibilities for greater efficiencies and waste reduction. Other innovations for carbon recapture, ZNE, and negative emissions as well as building codes, and industry sustainability standards such as LEED, Living Building Challenge, WELL and other sustainability standards are introduced for students to embark on their desired certification process.

DCMG 402: Entrepreneurship and Mngmt. Theory
dents prepare for the future of practice and explore management strategies and the tools necessary for an entrepreneurial mindset. They are introduced to frameworks around the theories of management, business models, leadership qualities, sustainability best practices, and various business constructs important to the successful management of a project team, a small business and a large enterprise. The important role a manager plays within an organizational structure and the notion that as a potential career path one might have a practice of one's own, is central to the course material.

DCMG 404: Construction Mngmt. Law and Ethics
The course examines legal implications of contracts, common, and regulatory law to manage construction projects. Case law and Tort law to include contracts, sales, leases, and business ethics are discussed through real world scenarios and implications. Managing risk, insurances and assurances, intellectual property and copyright, negligence and liability are core elements of the course. Ethics in relation to corporate governance, finance, discrimination, corporate social responsibility, ESG, fiduciary responsibilities, facts and disinformation are debated and discussed for robust outcomes.

SUPR 110: Intro to Environmental Policy and Mngmt.
This course explores how complex decision-making processes lead to the design and enactment of effective environmental policy. Students explore multiple stakeholder entities and pathways that lead to adopting environmental policy through historical, recent, international and local environmental crises. They engage case study methodology, real-world scenarios and contexts, and current policy proposals, when using environmental management tools. Students also employ current environmental policy mechanisms to debate and resolve environmental policy proposals by adopting multiple stakeholders' perspectives, leading to writing and presenting their own policy interventions.

DCMG 405: Construction Materials: Testing and Insp.
The course is structured so students access the Making Complex to test construction materials and work closely with the Institute for Material Ecologies to develop in-depth understanding of materials and their connections to environmental and political systems. Sustainable material indices are accessed to better understand the consequences of embodied carbon, material supply chains, and the inspection processes involved.

DCMG 401: Design Studio 4: Build for the Community
The course centers on developing a project and practicing theoretical concepts and prior learnings from coursework in the previous three years. Through design, sustainability, technology, business, and interdisciplinary skills students work collaboratively to design and build a community project for the public good. Projects are located in the surrounding neighborhoods or on campus. Students are encouraged to innovate, use their entrepreneurship skills, business knowledge, and sustainability goals to design and manage the project from inception to completion, within specified cost and time parameters.

Sustainable Practices

Overview

Sustainable Practices is an interdisciplinary degree that integrates knowledge of design, economics, policy, and environment to advance the field of sustainability. It promotes a rigorous understanding of how resources are used and how decisions are made in society, as well as the impact of technology and consumption on the environment. Central to the curriculum are interdisciplinary, problem-based studio courses that challenge students to develop links between the theory and practice of sustainability in real-world contexts.

Minor Requirements

course no.	course name	units	pre-req
SUPR 100	Intro to Environmenatl Problems and Design	3	
SUPR 110	Intro to Environmental Policy and Management	3	
ENVT 100	Intro to GIS	3	
*two of the following?			
SUPR 320	Environmental Economics	3	WRIT 113 and LSCI 1XX
SUPR 321	Energy and Society	3	WRIT 113 and LSCI 1XX
PHIL 325	Environmental Philosophy	3	LSCI 105/106/205, COMM 120, WRIT 313
POHI 352	Environmental Law and Policy	3	LSCI 105/106/205, COMM 120, WRIT 313

Contact

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SUPR 100: Intro to Environ Problems and Design
The course introduces students to the many dimensions of problem solving in environmentally-based design. Students use fieldwork and case studies informed by interdisciplinary inquiry to examine actual sites around Los Angeles, which becomes a living laboratory. This allows students to re-envision the problems and solutions to current and future design challenges posed by climate change in the built environment. Course material emphasizes visualizing and communication of data, applying interdisciplinary, analytic tools across multiple information platforms, and collaborative problem-solving via a design studio format. Key course objectives include understanding the changing relation between humans and the environment, effectively communicating findings in a rapidly-shifting environmental design discourse, and the ability to identify and articulate design opportunities for addressing the impacts of climate change.

SUPR 110: Intro to Environ Policy and Management
This course explores how complex decision-making processes lead to the design and enactment of effective environmental policy. Students explore multiple stakeholder entities and pathways that lead to adopting environmental policy through historical, recent, international and local environmental crises. They engage case study methodology, real-world scenarios and contexts, and current policy proposals, when using environmental management tools. Students also employ current environmental policy mechanisms to debate and resolve environmental policy proposals by adopting multiple stakeholders' perspectives, leading to writing and presenting their own policy interventions.

ENVT 100: Introduction to GIS
Geographic Information Systems (GIS) are employed by a wide range of fields and disciplines, from environmental science to healthcare, business, real estate development, urban planning and construction management. GIS software links geography (locations and shapes of constructed or natural features) with attributes (quantities such as number of people, qualities such as type of species or level of contamination hazard). This course serves as an introduction to the concepts and practice of GIS and seeks to familiarize students with the many applications of GIS technologies. Utilizing a project-based methodology throughout the course, students will have the opportunity to merge application and theoretical topics.

SUPR 320: Environmental Economics
This course introduces economic principles and tools used to analyze and ameliorate environmental challenges. Course content reviews how market economies and other economic systems perpetuate natural resource depletion and how students might rethink renewable and nonrenewable resource issues in economic terms. Students are introduced to micro- and macroeconomic theories and test them through real-world case studies in corporate accountability, uneven resource allocation, environmental injustice, scarcity, and consumer choice. The class pays particular attention to the independent and complementary roles of markets and governments in national and international contexts.

SUPR 321: Energy and Society
How we produce and use energy has a far-reaching impact on our communities, both local and global. This course examines the historical conditions that shaped major developments in energy extraction and consumption, from fossil fuel dependence and resource depletion to renewable and sustainable alternatives, and then analyzes how these approaches are currently being perpetuated and/or rethought. As part of this process, students consider the fundamentals of energy science, infrastructures, and alternative technologies. Importantly, the course takes a social justice lens to exploring how power and inequality shape energy access and the uneven impact energy production has on different communities and geographic regions. Class projects include a group environmental project and paper, such as a beach cleanup, a film review, and a group presentation on a research topic. Field trips and guest speakers inform student's understanding of how social, political, and cultural factors shape energy in Southern California.

PHIL 325: Environmental Philosophy

POHI 352: Environmental Law and Policy