College of Architecture

Courses

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Architecture

Visit online course listings to view semester offerings for A46 ARCH.

A46 ARCH 111C Introduction to Design Processes I
The first year of the core studio sequence examines interactions between architecture and environments through the design of a small-scale project. Key concerns include global climate change, ecological systems, and sustainability. This year emphasizes experimentation in which students search for a conceptual position relative to architecture history, theory, and culture via the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on engagement with abstraction, context, and temporality in a series of design projects that include: (1) a body device, (2) a ground, and (3) a temporary structure. Exercises explore problems of translation between 2 and 3-dimension, site and climate study and design, and narrative design. Introduction to Design Processes I is the first in the series of the five required core studios in the undergraduate architecture program. No prerequisites. Credit 4.5 units.

A46 ARCH 112C Introduction to Design Processes II
The first year of the core studio sequence examines interactions between architecture and environments through the design of a small-scale project. Key concerns include global climate change, ecological systems, and sustainability. This year emphasizes experimentation in which students search for a conceptual position relative to architecture history, theory, and culture via the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on engagement with abstraction, context, and temporality in a series of design projects that include: (1) a tectonic surface, (2) land and waterscapes, and (3) a gathering space. Exercises explore problems of size and scale, object to field, and figure-ground. Introduction to Design Processes II is the second in the series of the five required core studios in the undergraduate architecture program. Prerequisites: Successful completion of A46 111C or A46 144 with a grade of C- or better. Credit 4.5 units.

A46 ARCH 144 Architecture for Non-Architects
Architecture for Non-Architects introduces non-architecture students to the process through which architects think about, view and produce the built environment. This new course is meant to serve as an alternative to the traditional studio instruction in the major, thus allowing students who are curious about architecture to experience it without the demands and commitment of major courses. If a student decides to transfer into the architecture major later on, they will meet with the architecture minor lead advisor to jointly propose a planned course of study that addresses any missing credits and foundational skills required for successful completion of the architecture major. This foundational course proposes a combination of readings, class discussions and research that will be used to inform the design process. Field trips will initiate students into the act of seeing by challenging them to observe, interpret and critically engage with the built environment (“the site”) and those who are affected by it (“the stakeholders”) in specific scalar and temporal contexts. Credit 3 units. EN: H

A46 ARCH 151 Representation I
This course introduces students to the ever-expanding, extra-disciplinary array of tools, techniques, software, equipment, and media at play in architectural representation. Organized as a lab, the course presents a series of one to three-week-long, in-class exercises that focus on skill-building and encourage experimentation within a narrow framework. Three primary areas of focus include visualization (freehand drawing, hand-mechanical projection, digital model-making, digital projection, and photography), fabrication (hand model-making, woodworking, and CNC routing), and curation (portfolio design, display, and presentation.) Representation I is the first in the series of two required representation workshops in the undergraduate architecture program. No prerequisites. Credit 1.5 units.

A46 ARCH 152 Representation II
This course introduces students to the ever-expanding, extra-disciplinary array of tools, techniques, software, equipment, and media at play in architectural representation. Organized as a lab, the course presents a series of one to three-week-long, in-class exercises that focus on skill-building and encourage experimentation within a narrow framework. Three primary areas of focus include visualization (freehand drawing, hand-mechanical projection, digital model-making, digital projection, and photography), fabrication (hand model-making, woodworking, and CNC routing), and curation (portfolio design, display, and presentation.) Representation II is the second in the series of two required representation workshops in the undergraduate architecture program. Prerequisites: Successful completion of A46 151 with a grade of C- or better. Credit 1.5 units.

A46 ARCH 185 Practices in Architecture, Landscape Architecture, and Urban Design
This course offers first-year students in the College of Architecture an introduction to the subjects, theories, and methodologies of the disciplines of architecture, landscape architecture, and urban design. Examples are drawn from a range of historical periods, and contemporary practice highlights distinct processes of thinking and working in each discipline and areas of intersection and overlap. Concurrent registration in A46 112C or A46 144 is recommended. Credit 3 units.

A46 ARCH 209 Design Process
Open to Engineering, Arts & Sciences, Business, and Art students at all levels. This studio course will engage students in the process of design with an emphasis on creative thinking. Course content relates directly to the interests of engineers, arts & science, business and art students who wish to problem solve about positively shaping the texture and quality of the built world. A series of 2D & 3D hands-on problem-solving projects introduce students to design concepts as they apply to site (eco-systems and outdoor places), to humanistic place making (personal and small public spaces), to structure & materials (intuitive exploration of structural principles through model building), to environmental issues (effects of climate, light, topography, context and sensible use of natural resources). No technical knowledge or special
A46 ARCH 2647 Italian Language (Florence)
This course covers Italian grammar and conversation for study abroad students in Florence. Taught entirely in Italian. There is an emphasis on class participation accompanied by readings and writings. The student develops facility speaking the language on an everyday basis.

A46 ARCH 2661 Semester Abroad Program Seminar
This course will prepare students participating in the Sam Fox School’s Semester Abroad Programs. The seminar will meet 8 times over the course of the semester. Attendance is mandatory for students going abroad. Prereq: College of Art and College of Architecture students selected for the Sam Fox School Abroad Programs. Same as F20 ART 2647
Credit 1 unit; EN: H

A46 ARCH 275 Service Learning Course: Environmental Issues
This service learning experience allows Washington University students to bring their knowledge and creativity about the many subjects they are studying to students at the Compton-Drew Middle School, which is adjacent to the Science Center in the City of St. Louis. This course is for Arts & Sciences students of differing majors and minors, business students, architecture and art students, and engineering students from all engineering departments. During the first third of the semester, students will do the following: 1) begin learning the creative process of lateral thinking (synthesizing many variables, working in cycles); 2) work with a teammate to experiment with the design of two- and three-dimensional hands-on problem-solving workshops about exciting environmental issues for small groups of students at Compton-Drew Middle School; 3) devise investigations for the workshops about environmental issues embracing the sciences, the humanities, and the community; and 4) work with the professor (both individually and with their team) as well as faculty from a specific discipline to prepare their evolving curricular plan. During the last two thirds of the semester, students will be on site during the Compton-Drew school day (once a week for an hour and a half) to teach small-group workshops for some of the sixth- and seventh-grade students. This course is open to first-year students, sophomores, and juniors.
Credit 2 units.

A46 ARCH 300A Design Foundations Studio
This is an intensive three-week course that sets students up to enter the first of a two-semester studio sequence. The first-year sequence introduces students to architectural design, focusing on conceptual, theoretical, and tectonic principles. Enrollment is open to first-semester MArch 3 students only.
Credit 3 units.

A46 ARCH 303B Design Drawing
Drawing is a fundamental act that is intrinsic to who we are as visual designers, visual thinkers, visual learners, visual problem solvers, and visual communicators. We drew even before we could write. It is an integral part of a design process and foundational to how we navigate the digital world. This course will explore all these aspects of drawing and its role in today’s culture. It is a hands-on course that allows students to explore and experiment with a variety of representational media, including freehand drawing, rendering, and digital drawing. An emphasis will be put on drawing as a way of searching for and discovering design solutions. The majority of the drawings produced will not be ends in themselves as finished products; rather, drawing will serve as a process-driven medium for exploring new ideas and design solutions.
Credit 3 units.
A46 ARCH 303C Unveiling the Detail: A Lesson in Forensic Drawing & Discovery
This course will explore architectural detailing from the quotidian to the sublime to posit architectural design intent. Through fieldwork and research, students will study the role of architectural detailing in the configuration and execution of architectural space making. Students will be asked to carefully observe their own constructed environment and architectural precedents to understand the truth and fiction in construction. This course seeks to help students understand the role of the architectural detail in articulating and reinforcing architectural concepts. It will strengthen the student’s understanding of material properties, opportunities and limitations, construction sequencing, and design execution. Students will gain a new appreciation for the exquisitely executed architectural detail and strengthen the skill to anticipate and navigate detailing challenges in their own design work. Students will be asked to explore architectural details through various drawing methods, modeling, and modes of representation. This course is open to architecture students at all levels with an interest in drawing and realizing architecture as a constructed practice.
Credit 3 units. Arch: ECOL

A46 ARCH 304 Shared Ecologies and Design
This interdisciplinary course will introduce biological, social and cultural ecology concepts to proactively address current stressors that impact and are being impacted by design and the built environment. These effects and affects range from (but are not limited to) climate change science; racial and social justice impacts; sustainability, resiliency and adaptation-design strategies; systems-based and multi-scalar understandings; and interrelational human and non-human environments bound in both acting and being acted upon locally and globally.
Same as A46 LAND 304
Credit 3 units. Arch: ECOL

A46 ARCH 307X Community Building
This course looks at the intersection of the built fabric and the social fabric. Using St. Louis as the starting point, this course takes students out of the classroom and into a variety of neighborhoods -- old, new, affluent, poor -- to look at the built environment in a variety of contexts and through a variety of lenses. Almost every week for the first half of the semester, students visit a different area of the city, with each trip highlighting some theme or issue related to the built environment. These include topics such as architecture, planning, American history, investment and disinvestment, community character and values, race, transportation, immigrant communities, and future visions. Running parallel to this, students will be involved in an ongoing relationship with one particular struggling neighborhood, in which students will attend community meetings and get to know and become involved with the people of the community in a variety of ways. Students learn to look below the surface and beyond the single obvious story for multiple stories to discover complexity, contradictions and paradoxes. They also come to consider the complex ways in which architecture and the built environment can affect or be affected by a host of other disciplines.
College of Architecture and College of Art sophomores, juniors, and seniors have priority. Students will add themselves to the wait list and will be administratively enrolled in the course. This course fulfills the Sam Fox Commons requirement.
Credit 3 units. Arch: SEM Art: CPSC

A46 ARCH 308B Engaging Community: Understanding the Basics
What does it mean to engage in community as a creative practitioner? Community engagement must be grounded in authentic relationship building and an ability to understand and act within the historic context and systems that impact communities. We will practice the skills of listening, observation, reflection, and improvisation. We will cultivate mindsets that focus on community assets and self-determination.
Workshops will teach facilitation and power analysis, with the intention of upending the power dynamics between community and creators. It may count toward the minor in Creative Practice for Social Change if bundled with “You Are Here: St. Louis’ Racial History Through Sites and Stories.”
Same as F20 ART 308B
Credit 1.5 units. Arch: SEM Art: CPSC

A46 ARCH 308H Alberti Program: In the Public Schools
The Alberti Program is a problem-solving studio workshop about architecture, community, and the environment. WashU students enrolled in this course will serve as teachers: developing curriculum and visiting classrooms in regional public schools to teach 2D and 3D hands-on problem-solving projects. They will serve as guides for student participants through the field of architecture, the design process, and sustainable design within lectures and discussions regarding projects they will undertake. WashU students may earn a maximum of 3 credits for this course. This course requires off-site travel, arranged once the semester has begun. NOTE: Students enrolled in this course must pass a background check in order to remain enrolled.
Credit 3 units.

A46 ARCH 311B Architectural Design III
The third year of the core studio sequence examines interactions between architecture and society through the design of a large-scale project. Key concerns include architectural agency, community activism, and socioeconomic justice. This year emphasizes voice as students adopt their own conceptual position relative to architecture history, theory, and culture via the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on engagement with tectonic assemblies, public space, and programming in a series of design projects that include: (1) a precedent analysis, (2) a detailed study of the project’s urban context, and (3) a mixed-use vertical structure. Exercises explore problems of grids and frames, urban and architectural space, and programmatic interrelationships. Architectural Design III is the fifth in the five required core studios in the undergraduate architecture program. Prerequisites: Successful completion of A46 111C or A46 144, 112C, 211D, and 212D with a grade of C- or better. Concurrent registration in Building Systems I is required.
Credit 6 units.

A46 ARCH 312B Architectural Design IV
The third and fourth years introduce a selection of option studios to students. This year emphasizes voice as students adopt their own conceptual position relative to architecture history, theory, and culture through the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on advanced architectural design and an in-depth study of a specific topic through rigorous design development. Prerequisites: Successful completion of A46 111C or A46 144, 112C, 211D, 212D, and 311B with a grade of C or better.
Credit 6 units.

A46 ARCH 315B Historic Preservation, Memory and Community
Whose history is significant enough to be worth preserving in physical form? Who gets to decide, and how? Does the choice to preserve buildings, landscapes and places belong to government, experts or ordinary people? How does the condition of the built environment impact community identity, structure and success? This place-based course in historic preservation pursues these questions in St. Louis’ historically Black neighborhood The Ville, where deep historic significance meets a built environment conditioned by population loss, disinvestment and demolition. The course explores the practice of historic preservation as something far from neutral, but a creative, productive endeavor that mediates between community values,
A46 ARCH 316A Portfolio Design
Architecture portfolios play an essential role in framing and presenting work in academic and professional contexts. The portfolio serves as a record of one’s creative and intellectual thought, production, and experience. Through the highly personal and reflective act of re-presenting images and texts, the portfolio frames an individual’s position in the field of architecture. Architecture Portfolio Design facilitates the production and development of a comprehensive portfolio and covers the essential concepts and techniques of contemporary portfolio production. Prerequisite: A46 311B or A46 419
Credit 3 units. Arch: NLCU

A46 ARCH 316F Re-Discover the Child
It is said that at this time in history the entire country must make a commitment to improve the positive possibilities of education. We must work to lift people who are undererved; we must expand the range of abilities for those who are caught in only one kind of training; and we must each learn to be creative thinkers contributing our abilities to many sectors of our society. In this course, during the semester we will expand our views about learning by experimenting with the creative process of lateral thinking. We will learn about learning by meeting with some brilliant people at the university and in the St. Louis community who are exceptional in the scholarly, professional, and civic engagement work they are accomplishing. We will learn about learning by working in teams to develop exciting curricula (based upon the knowledge and passion WU students bring from their academic studies and range of interests) for middle school students from economically disadvantaged urban families. Each week of the semester, we will learn about learning by giving 2-D / 3-D hands-on problem solving workshops, once a week for one hour each week, for elementary school students. You and your WU teammate will implement the workshops you create. In this course we celebrate the choices of studies we each pursue, and we expand our experience in learning from each other’s knowledge bases and learning from each person’s particular creativity in problem-solving. This course seeks students from all disciplines and schools, freshmen through seniors. Course fee applies to mandatory background check and is not refundable.
Credit 3 units. Art: CPSC

A46 ARCH 316T Printmaking for Architecture and Art Students
This course will focus on monotype mixed media printmaking using both a press and digital print processes. The course is designed to be responsive to current issues with a focus on contemporary printmaking practices and various ideas about dissemination in the age of social media. The course will include an examination of historical examples of diverse global practices; prints made in periods of uncertainty, disruption, war, and disaster; and speculative projects by architects such as Superstudio, Zaha Hadid Architects and Archigram. Students will be expected to create a series of work with a conceptual framework developing a personal visual language.
Same as F20 ART 316T
Credit 3 units. Art: FAAM EN: H

A46 ARCH 316X Cycles
Students design and build human-powered vehicles from discarded bicycles. The course collaborates with student mechanics involved with Bicycle Works (Bworks). Bworks collaborates in teams with Washington University students to design and build the work.

Credit 3 units. EN: H

A46 ARCH 317A Architectural Design I (MArch 3)
The first of a two-semester sequence that introduces students to architectural design, focusing on conceptual, theoretical, and tectonic principles. Enrollment is open to first-semester MArch 3 students only.
Credit 9 units.

A46 ARCH 318A Architectural Design II (MArch 3)
The second of a three-semester sequence of core design studios, which continues the examination of issues raised in ARCH 317. Enrollment is open to second-semester MArch 3 students only.
Credit 9 units.

A46 ARCH 323A Architectural Representation I (March 3)
This course examines the history/theory and practice of representation, specifically the systems of drawing used in architecture. The objective is to develop the requisite discipline, accuracy, and visual intelligence to conceptualize and generate a relationship between space and form. The course focuses on two concurrent tasks: first to outline and analyze the historical development of representational logics and their impact on architectural ideation, and second to explain the codification and usage of specific geometries, including orthographic and isometric projection, central and parallel perspective, and architectural axonometric. We will see that, rather than a translation of reality, representation operates between perception and cognition as a transcription of reality and is thus a powerful instrument in the design and making of architecture. The relationship between the drawing forms and the tools used to produce them are brought into focus as manual, digital, photographic and physical applications driven by drawing intentions. The course is organized as a lecture/lab with emphasis on practice of manual and photographic applications.
Credit 3 units.

A46 ARCH 323B Architectural Representation II (March 3)
The course examines the history/theory and practice of representation, specifically the systems of drawing used in architecture. The objective is to develop the requisite discipline, accuracy, and visual intelligence to conceptualize and generate a relationship between space and form. The course focuses on two concurrent tasks: first to outline and analyze the historical development of representational logics and their impact on architectural ideation, and second to explain the codification and usage of specific geometries, including orthographic and isometric projection, central and parallel perspective, and architectural axonometric. We will see that, rather than a translation of reality, representation operates between perception and cognition as a transcription of reality and is a powerful instrument in the design and making of architecture. The relationship between the drawing forms and the tools used to produce them are brought into focus as manual, digital, photographic and physical applications driven by drawing intentions. This course is organized as a lecture/lab with emphasis on the practice of digital media and physical modeling. Emphasis is on participation and excessive absences will be noted. PLEASE NOTE: The second half of the semester will focus on computing, for which each student is required to have a laptop computer.
Credit 3 units.

A46 ARCH 326G Digital Fabrications
This course will focus on fabrications both real and virtual. The ubiquity of computers in design, studio art, communications, construction, and fabrication demand that professionals become comfortable with their use. It is also important in a group of ever-specializing fields that one know how to translate between different software and output platforms. This comfort and the ability to translate between platforms allow contemporary artists and designers to fabricate with ever-
increasing freedom and precision. This course will introduce students to 3D software with a focus on 2D, 3D, and physical output. Through a series of projects, students will learn to generate work directly from the computer and translate it into different types of output. Starting from first principles, this course will cover the basics from interface to output for each platform used. This course will also familiarize students with a range of CNC technology and other digital output for both small- and large-scale fabrication. The course will be broken into three projects. In the first project, students will focus on computer-generated geometry and control systems. In the second part, students will generate physical output and line drawings. The final project will focus on rendering, context, and cinematic effects. The software covered in this course includes, but is not limited to Rhinoceros 3D, Maya, Illustrator, Photoshop. Additionally, students will use the 3D printer, laser cutter, and/or other digital output tools.

Credit 3 units.

A46 ARCH 326J Digital Representations

Digital Representations introduces students to digital modeling and fabrication, parametric workflow, and various 2-D and physical output techniques. Starting from first principles, this course begins with the basics from interface to output for each platform used, developing skills in digital modeling and physical output and serving as a prerequisite for more advanced courses in design scripting and digital fabrication. Students will complete a semester-long project divided into three assignments, beginning with developing a detailed digital model of a formal precedent, which introduces students to basic skills in modeling with nurbs, subdivision surfaces, and meshes. Continuing to develop a clear diagrammatic organization and hierarchy, students will expand the characteristics of their original formal precedent using Grasshopper to create a set of dynamic, flexible behaviors. Drawing upon their initial understanding and analysis of organizational systems within their formal object, students will transfer their observations into the construction of a spatial parametric model that has potential to serve structure, fabrication methods, and material assembly. Finally, students will develop their digital model into a geometrically rationalized material system that draws upon their initial precedent, producing a physical model, renderings, and 2D drawings presented in the format of a final review.

Credit 3 units.

A46 ARCH 326K Digital Evolutions: Parametric Design for a Fabricated Species

Digital Evolutions will introduce digital modeling, parametric workflow, and fabrication techniques in a variety of two and three-dimensional media to document the imagined development of a hypothetical animal species. As a prerequisite for more advanced courses in design scripting and digital fabrication, this course will introduce each technique at a foundational level giving every student a new arsenal of digital tools with which they can act as evolution’s (intelligent) designer.

Students will begin with an analysis of drawings by Ernst Haeckel (1843-1919), a German biologist, naturalist, philosopher, and artist whose own alternative theories of evolution have subsequently been discredited. Students will use Grasshopper and associated plug-ins to exploit the powerful flexibility of parametric design to iteratively adapt these studies to various imagined environmental conditions. Working in pairs, students will crossbreed their species, synthesizing ideas concerning skin, support systems, pattern, and kinetics, finally modeling this fictitious entity with a geometrically rationalized material system—a fabricated fabrication.

Credit 3 units. Arch: HUM Art: FADM

A46 ARCH 326L Anxious Vision: Real Time and the Architecture of Video Games

What can architects learn from examining the visual structures of 3D video games? How have they influenced the culture of architectural representation? Why should the gaming perspective be considered essential elements for contemporary architectural theory? How is video game theory instrumentalized in the creation of architecture? To begin, video game engines are becoming ubiquitous features in architectural rendering culture. Platforms like Unreal, Unity, and Twinmotion offer designers tools to create environments that can be explored and interacted with in real time by the user-client. Although 3D modeling, rendering, and animation platforms have been commonplace in architecture schools and experimental studios since the 1990s, accessible, interactive, real-time rendering platforms are a more recent and less studied phenomenon. The architecture of level design and the companion art of worldbuilding constitute a new representational paradigm. In this seminar, we will examine the spatial structures of contemporary gaming titles and explore a series of historical and theoretical texts from Video Game Studies. The final assignment will be project-based and designed using the Unreal Engine.

Credit 3 units.

A46 ARCH 326Q Evolution of a Section: Architecture and Machine Learning

Throughout human history, architecture was seen as static, a quality attributed to its inherent physicality. This seminar encourages students to conceive of an architecture, through the medium of an architectural section, that mutates across space and time. Using Machine Learning processes, the class intends to propose an alternative and nonlinear means of production to the linear process of architectural design from conception to construction. Machine learning engages graphic information differently than designers do. All fidelity towards visual, cultural, political, and geometrical context is lost, resulting in a new class of compositions that are unique but not critical. The systems, including Generative Adversarial Networks, Convolutional Neural Networks, and Diffusion Models, are explored with input (images/texts) and analyzed as output images. We will collectively conjecture on how to ‘train’ the AI models to understand spatial features typical of an architectural section. We will rely on the rich history of architectural sections, across time, styles, and media, to inform the potential trajectories that our section follow. The works of contemporary artists and architects, like Matias Del Campo, Gabriel Esquivel, Helena Sarin, Refik Anadol, etc. who work with Machine Learning technologies, will be analyzed to understand approaches towards AI and Design.

Credit 3 units.

A46 ARCH 327D Digital Lighting Design: Rapid Prototyping and the CNC

Students in this course will develop an intimate understanding of CNC technology and its ability to rapidly prototype and fabricate within an iterative design process. Through an accelerated feedback loop, the class will work quickly through maquettes, renderings, prototyping, and fully formed products multiple times within the semester. Lectures will include both current and historic approaches to lighting design to better inform the initial drawing process. This course will also include technical instruction on CNC, processes specific to the equipment at Sam Fox. Coursework will culminate in an exhibition of lighting displays and relevant documentation to accompany the research. Students wishing to enroll in this class should have a functioning knowledge of Rhino.

Credit 3 units.
A46 ARCH 327W Color in Space | Space in Color
It is perhaps not a coincidence that one of the main literatures on color still relevant today - Josef Albers' Interaction of Color (1963) - has its origins in the Bauhaus pedagogy. After all, color is a major design element that alone has the power to transform a space. Color ignites the imagination, holding the potential to elevate being in a space into an emotional experience. In this design seminar, students will investigate the use of color in architecture and spatial practices. Architectural practitioners and artists - from Josef & Anni Albers, Luis Barragán, Hélio Oiticica, Bridget Riley, James Turrell, Olafur Eliasson, James Casebere, Bruce Nauman, and others - will be the subject of a number of case studies. Short weekly lectures will be presented on selected topics and concepts such as color theory, simultaneous contrast, perception and optical mixing of color, use of artificial and natural light, interactive effects and relationships of colors, color as a prominent compositional and spatial element, environmental influence on color, among others. In tandem with the lectures, students will work on a small series of independent explorations studying color and light phenomena in physical modeling, drawing, photography and digital color mapping. The goal is to inspire architecture and urban design students with the expressive and poetic qualities of color and its potential material depth.
Credit 3 units.

A46 ARCH 327X Color Systems
This course is a sustained investigation of color. Students study how color is affected by light, by space, by arrangement, by culture, and by commerce. The course aims to deepen the understanding of color’s complexity and pervasiveness as a fundamental element of shared visual culture. The course develops both technical and conceptual skills to aid in visual translation. In addition to color-specific inquiry, a goal is to expand ideas of research and enable students to integrate various methods of acquiring knowledge into their art and design practice. Throughout the course, students discuss various processes of making/constructing, the connection between color/form/concept, and strategies for idea generation and brainstorming. The course allows for much individual freedom and flexibility within varying project parameters. College of Architecture and College of Art sophomores, juniors, and seniors have priority. Fulfills Sam Fox Commons requirement. Prerequisite: Drawing I, Communication Design I, or 2-D Design, or permission of instructor.
Same as X10 XCORE 327X
Credit 3 units. Art: FADM: H

A46 ARCH 3280 Architectural History I: Antiquity to Baroque
This lecture course will introduce major historical narratives, themes, sites, and architects from ancient Greece to the end of the Baroque period. We will take an extended look at the dawn of the modern period during the 15th and 16th centuries through a global perspective, turning eastward from Renaissance Europe to the Ottoman, Mughal, Chinese, and Japanese empires. The great chronological and geographic span of this course will be pulled together around the themes of classicism and its subsequent reinterpretations as well as the pursuit of the tectonic ideal. Our aim is to recognize how these ideological pursuits of modern architecture evolved out of longer historical processes. We will also pay close attention to major sites of landscape and urban-scale work. Requirements will include a mid-term exam, a final exam, and a series of short papers.
Credit 3 units. Arch: HT

A46 ARCH 3284 Architectural History II: Architecture Since 1880
An introductory survey of the history and theory of architecture and urbanism in the context of the rapidly changing technological and social circumstances of the last one hundred and twenty years. In addition to tracing the usual history of modern architecture, this course also emphasizes understanding of the formal, philosophical, social, technical, and economic background of other important architectural directions in a global context. Topics range from architects’ responses to new conditions in the rapidly developing cities of the later nineteenth century, through early twentieth-century theories of perception and social engagement, to recent efforts to find new bases for architectural interventions in the contemporary metropolis.
Credit 3 units. Arch: HT

A46 ARCH 331A Experimental Formwork
Our perception of concrete is typically determined by the mold that gives it its shape and not the material itself. Given the fluidity of the material in its plastic state, the desired morphology and configuration once cured relies on its molding possibilities. During this seminar students will explore the essence of mold making, its possibilities and limitations as containers of a fluid material that will determine its final shape and surface quality. Starting from an understanding of standard molding procedures, students will explore a wide range of non-conventional formwork techniques such as flexible fabric, pneumatic, 3d printing, dynamic casting, rotomolding and others. Students will produce physical molds and cast prototypes in concrete or other materials through a process of experimentation and discovery. The ultimate goal of this course is to use formwork as an active and accessible design tool and fertile ground for innovation. Particular emphasis will be on discovering relationships between material properties and production methods as a way of finding systematic approaches that can lead to making prototypes combining digital and/or analog tools. Students are expected to develop creative processes that can be applicable to unprecedented and novel casting techniques and potentially to manufacturing methods of actual building components. The course is structured around an initial lecture about mold making precedents and possibilities, specific readings, a short research on traditional and other current -non-traditional- mold techniques and hands-on work. Students will work individually to fabricate small mold prototypes (6" x 6" x 6"), cast concrete or other fluid materials readily available to perform tests and produce accurate representation of the outcomes and its process. The course is open to undergraduate and graduate students.
Credit 1.5 units.

A46 ARCH 331B Innovative Bamboo
In this seminar we will explore bamboo as a sustainable material for innovative structures. Bamboo is a natural composite with high tensile and compression strength and grows in a cylindrical form that is optimal for carrying longitudinal forces. Furthermore, it is fast growing, sequesters more carbon than timber, produces more oxygen than a boreal forest, and even absorbs heavy metals from soil. Students will look at historic and contemporary precedence of bamboo as engineered products and as structural construction using simple poles. We will play with ways to connect, assemble, and build with this natural material. Finally, we will build large-scale models and prototypes of structural designs. The goal is to explore the wide range of design and engineering potential of this natural, often overlooked, structural grass.
Credit 3 units.

A46 ARCH 332A 1 House
In this seminar, students will research and develop designs for a completely off-the-grid "small" house in Boquete, Panama, for Kaylee and Jordan of the Nomadic Movement YouTube channel. With input from Kaylee, Jordan, and their crew, students will research traditional sustainable building practices in Panama and develop schematic designs for a small house to be built by them on their property in Boquete, with construction beginning in May 2021. The course will include instruction in residential design, structure, and materials and methods of construction. A subtext of the course will be
entrepreneurship and beginning one’s practice as an architect. To this end, students will be asked to write a prospectus for their architectural practice, including naming, branding, and producing their first YouTube video.

Credit 3 units.

A46 ARCH 333A Matsumoto Modern
Between 1948-1961, the Japanese American architect George Matsumoto designed more than 30 award-winning residences in North Carolina. The houses – demonstration homes for General Electric and Westinghouse, vacation houses sponsored by Women’s Day and the Douglas Fir Plywood Association, and homes for clients interested in new ideas in architecture – served as prototypes for domestic living inspired by postwar logics of mass production. The experimental homes provided opportunities to challenge norms and amplify particular design aspects through focused investigations of the potential of new materials, innovative construction systems, or provocative formal capabilities. Like the more well-known Art and Architecture magazine’s Case Study House Program on the West Coast, Matsumoto’s houses aspired to be functional, beautiful, and affordable while providing a model for modern American domesticity. Students in the course will undertake archival research for selected George Matsumoto-designed modern homes throughout the semester. Course work will include experimental, analytical drawings; archival research and writing; museum-level physical models; and other representations of residential work by Matsumoto. The resulting work is anticipated to be included in a future publication, an exhibition, and as a featured part of the larger research project Beauty in Enormous Bleakness: The Interned Generation of Japanese American Designers, which aspires to “tell an urgently needed new chapter in design and architectural history that acknowledges the signal contributions of Japanese Americans to post-war culture and cultural life.”

Credit 3 units. Arch: CAST, GACS

A46 ARCH 335X Urban Books
Since the beginning of the 20th century, art, architecture, and urbanism together have investigated the production of images that shape the symbolic dimension of our experience of large cities. The main goal of this course is to critically embrace this tradition through the format of the artist’s book. St. Louis is the focus for our observations because it is familiar to our everyday lives and also because it provides key situations for understanding contemporary forms of urbanity and how urban space is produced and imagined. The course bridges the curricular structures of art and architecture by enhancing the collaboration between the practical and scholarly work developed in both schools, with additional support from Special Collections at Olin Library. It combines the reading, lecture, and discussion format of a seminar with the skill building and creative exploration of a studio. This course is divided into three progressive phases of development: the first consists of weekly readings, discussion, and responses in the form of artist’s books. The second phase focuses on the Derive with physical activities and assignments based on interacting directly with the urban environment. The third phase focuses on individual research, documentation, and final book design and production. College of Architecture and College of Art sophomores, juniors, and seniors have priority. Fulfills Sam Fox Commons requirement.

Credit 3 units. Arch: GAUI, SEM, UI Art: CPSC, FADM EN: H

A46 ARCH 336D Biomimicry: A Biokinetic Approach to Sustain(Able) Design
There is a conceptual similarity between the way an organism and a building engage their respective environments. A biological system responds to the unique condition of its ecosystem; architecture responds to the unique conditions of the site. Building on this principle are the fields of biomimicry, the study of design and process in nature, and biokinetics, the study of movement within organisms, and their ability to address architectural problems with elegant, technologically advanced, sustainable solutions. Biomimicry: A Biokinetic Approach to Sustain(Able) Design focuses on kinetics as an essential element of biomimicry in the context of architecture and employs the study of the kinetic aspects of biological systems - structure, function, and movement - to inform the design and engineering of buildings. A systematic approach to researching and translating the kinetic function of organisms leads to a successful bridging of biological and architectural concepts.

Credit 3 units.

A46 ARCH 336E Biomimicry, Teleology & Organic Architecture
This seminar is intended to develop an understanding of the history and evolution of Biomimicry as a significant design tool from the emergence of Biology as a science in the early 19th century to the present. Biology was the first discipline to confront the problem of teleology, of design in nature. For the past one hundred years, biological references and ideas are present in the work of architects and in the writings of architectural theorists. Biomimicry, a term coined by Janine Benyus, has developed into a new discipline that studies well-adapted organisms designs and processes and then imitates life’s genius to design human applications, aiming at a sustainable development. The intent of this seminar is to establish a systematic approach to research and analysis of the history and theory of this biological analogy and its influence on the history of environmental architecture, as seen through the lens of biomimicry. In addition to a historical analysis, students will analyze case studies that exemplify the relationship of architecture to biology, focusing not only on built work, but on the writings and the designer’s positions in terms of this relationship. Classes will consist of a combination of formal lectures and facilitated discussion periods. In addition, each student will choose a particular architect and, through research and analysis, will assess the influence of biomimicry in his/her work and present these results in a paper that includes a critical analysis and a proposal on how to advance the architect’s work to the highest level of biomimicry.

Credit 3 units.

A46 ARCH 337N In Detail: Observation, Drawing, & Discovery
This course explores architectural detailing from the quotidian to the sublime to posit architectural design intent. Through fieldwork and research, students will study the role of architectural detailing in the configuration and execution of architectural space making. Students will be asked to carefully observe their own constructed environment and architectural precedents to understand the truth and fiction in construction. This course seeks to help students understand the role of architectural detail in articulating and reinforcing architectural concepts. It will strengthen students’ understanding of material properties, opportunities and limitations, construction sequencing, and design execution. Students will gain a new appreciation for the exquisitely executed architectural detail and strengthen the skill to anticipate and navigate detailing challenges in their own design work. Students will be asked to explore architectural details through various drawing methods, modeling, and modes of representation. This course is open to architecture students at all levels with an interest in drawing and realizing architecture as a constructed practice.

Credit 3 units. Arch: NLCU

A46 ARCH 343A Design As Export
This course introduces students to the contemporary global characteristics of design in the late 20th & 21st century. The marketing, fabrication, distribution and consumption of design is global, yet the cultural and formal identity of most design products are national and regional. How do traditions of design and quality based on centuries of a national and regional design culture react and adapt to a global market? What is the culture of design? What is design identity? Italian design will be the primary focus of this course, followed by Japanese and Asian design & manufacturing. Case studies will include examples of industrial design, fashion design, communication design and
The course will also include presentations by design curators and representatives of various international design companies. This course will count as a foundational seminar for the Global Certificate Program (http://global.wustl.edu/university-wide-international-initiatives/the-global-certificate/).

Credit 3 units.

**A46 ARCH 343X Digital Filmmaking: City Stories**

DIGITAL FILMMAKING: CITY STORIES is a cross-University video art course for students interested in making short films through a transdisciplinary and time-based storytelling in both narrative and non-narrative formats. Whether documentary or abstract, individually produced or collaborative, all projects in this course have a required social and urban engagement component. In this course, the City becomes a laboratory for experimentation and contribution. Students meaningfully engage St. Louis and their projects address sites of concern to explore the complex fabric of the city by way of framing and poetic juxtaposition. CITY STORIES merges several arts and humanities disciplines, including experimental cinema and documentary journalism and create an opportunity for empathic listening and inquiry as students discover stories built from collective as well as individual memories.

Same as X10 XCORE 343

Credit 3 units.

**A46 ARCH 345A The Corner Problem**

The corner problem is a classic architectural challenge of how a material, pattern or system turns a corner. In particular, the class will focus on facades that include sun-shading elements, thus increasing the thickness of the assembly. Turning a corner sounds benign until you consider that all materials have thickness, and then the problem reveals itself. This too often results in an oversimplification and thus reduction of the design intent. This course will focus on designing custom facade systems using advanced digital modeling techniques and testing through physical prototypes. Knowledge of material systems and modeling techniques will be supplemented through discussions with industry leaders in facade design and fabrication.

Credit 1.5 units.

**A46 ARCH 347F Furniture Design, Emphasis Metal**

Students design and make small tables using metal as the primary material. Traditional and emergent technologies will be explored such as welding and use of cnc plasma cutting. No experience is necessary.

Credit 3 units.

**A46 ARCH 348A Body as Site: Jewelry Design as Architecture**

In this course, students will undertake a 3D printing and casting process to realize an architecturally conceived set of jewelry in metal and create drawings and renderings of this set. Often, metal 3D printed parts are used as industrial components and engineered mechanical parts. This project will reverse that to create delicate objects that engage with skin. Students will create a parure (a set of related pieces of jewelry) that will examine the human body as an architectural site and test the potential of metal 3D printing in architecture. We will use Autodesk Maya to create hyper-articulated surfaces and employ lost wax and lost plastic casting. For artifacts that require fine detail, students will outsource their projects to wax 3D-printing and casting facilities. (Outsourcing for a typical ring costs approximately $15 in steel and $35 in silver. Total course costs are estimated to be $100.)

Credit 1.5 units. Arch: ETH, NS

**A46 ARCH 348B Furniture**

This seminar will explore the work of the Italian architect Enzo Mari, with a focus on his autoprogettazione? furniture and book project of 1974. The book offers free designs of furniture that can be built with only a few tools, simple materials, and basic skills, such as measuring, cutting, and hammering. In 2015, Mari granted the Berlin-based CUCULA: Refugees Company for Crafts and Design the rights to redesign and sell the furniture. Students will take up this charge and redesign the furniture from autoprogetta(zione? again, with each student building a redesigned chair. Please note that this seminar will require students to acquire the following tools: a measuring tape, a hammer, a hand saw, and a hand drill and bits (approximate cost of $75.00 new, $25.00 if the student is resourceful). (The professor will contact the student in 25 years and ask if they still have the tools.)

Credit 1.5 units.

**A46 ARCH 350 Service Learning Course: Environmental Issues**

This interdisciplinary service-learning experience allows WU students to bring their knowledge and creativity about the many subjects they are studying to students at a St. Louis City elementary school. WU students will learn about the creative process of lateral thinking (synthesizing many variables, working in cycles, and changing scales). WU students will work in teams to experiment with the design of 2-D and 3-D hands-on problem-solving workshops for small groups of students to accomplish. WU students will devise investigations for the workshops about environmental issues embracing fields in the natural sciences, humanities, social sciences, architecture, art, engineering, and business with the community. In this course, we celebrate the choices of studies we each pursue, and we expand our experience by gaining from each other’s knowledge bases and each person’s particular creativity. This course is for Arts & Sciences students of differing majors and minors, business, social work, architecture and art students, and engineering students from all engineering departments. Course fee applies to mandatory background check and is not refundable.

Credit 3 units. Art: CPSC

**A46 ARCH 355 Interdisciplinary Ecosystems Principles Integration**

The mission of this interdisciplinary seminar class is to “Advance interrelationships of ecological and human systems toward creating healthy, resilient, and biodiverse urban environments”, and will bring together experts and students in ecology, urban design, architecture/landscape architecture, economics, social work, and engineering, drawing from inside and outside the WU community.

Credit 1 unit. Art: CPSC

**A46 ARCH 355A Carbon Neutrality in Architectural Design**

Team WashU aims to create a solar home to educate the public on a state-of-the-art, carbon-neutral, adaptive healing space for occupational therapy services using innovative interior, architectural, and system design to meet the users' physical, social, and emotional challenges. The study will focus on design, materials, and renewable energy by illuminating the role of carbon in the built environment, and it will help students understand the principles and application of carbon assessment methods and Life Cycle Analytical (LCA) tools. Students will integrate carbon-neutral design principles into design, fabrication, and construction processes, testing the limits of conventional sustainable design practices and developing new strategies for designing carbon-neutral buildings. Students will work individually to create preliminary design schematics (and their associated structural morphologies, enclosure systems, and MEP
defy preconceived notions of the architectural canon. These projects disrupt prevailing design norms. Student projects will leverage investigations how the presently available AI tools can productively identify its vast potential influence on the design workflow. This course The ever-evolving forms of the technology make it challenging to with limited experience of the tools perceive themselves as ‘AI Experts’. The mass availability of Machine Learning processes makes individuals with environmental problems and the relationship between design thinking and innovation. The course will explore how these ideas and techniques are similar to practices in science, engineering, business, and the liberal arts and how they might be applicable to multi-disciplinary problem solving. Topics will include perception, representation, technology, group intelligence, bio-mimicry, and context-based learning, among others. Emphasis will be given to the intersection of design thinking with environmental problems and the relationship between design thinking and innovation. The course will include lectures, guest lectures with case studies, and design projects. Open to all undergraduate students. Credit 1.5 units. EN: H

A46 ARCH 3823 Fifteenth & Sixteenth Century Florence, Rome & Venice: Rethinking Renaissance Visual Culture
The Early Renaissance - also known as the quattrocento - usually denotes the period from circa 1400 to circa 1500. In those 100 years, Italy, particularly Florence, witnessed an extraordinary coming together of artistic talent, a passionate interest in the art and culture of Greek and Roman antiquity, a fierce sense of civic pride and an optimistic belief in the classical concept of “Man as the measure of all things”. This course examines the principal artists who contributed to this cultural revolution. In order to take full advantage of the special experience of studying the renaissance in the very city of its birth, the stress is mainly, although not exclusively, on Florentine artists who include sculptors such as Donatello, Verrocchio, and Michelangelo, painters such as Giotto, Masaccio, Uccello, Botticelli, Leonardo, and Raphael; architects such as Brunelleschi and Alberti up to Sangallo.
### A46 ARCH 3824 The Italian Renaissance in the City of Florence
This course encompasses the Renaissance from Giotto through the High Renaissance. Students will be able to examine first-hand the works they are studying. Included are field trips to Rome and Venice.

Same as F20 ART 3824  
Credit 3 units. Art: AH EN: H

### A46 ARCH 3825 Florence as a Cultural Artifact: The History of Architecture as the History of the City
This course combines seminar and workshop activities aiming at the understanding of the rich urban and architectural history of Florence, the place of students’ work and temporary living during the study abroad program. These activities will be in dialogue with the design studio and art history courses. The intellectual framework of the course is informed by Giulio Carlo Argan’s seminal work “La storia dell’arte come storia della città” (The history of art as the history of the city, Einaudi, 1983), presenting the city as a complex time-space phenomenology of cultural artifacts. While Florence is well known for its cultural contribution to Western cultural history during the 1400s and 1500s, little is known about the full span of its millenial history, including its contemporary developments. The seminar activities will cover such aspects through readings and lecture-cum-sketching urban and architectural documentation tours in the first part of the semester, leading to the development of individual artists’ book projects to be completed in the second part of the semester for the program’s semester exhibition.

Credit 3 units.

### A46 ARCH 3828 Lets Go to the Market
Set against the backdrop of the heavy stone walls of the Renaissance city, the Florentine piazza serves as a hub of rotating events and informal activity centered around the exchange of goods and culture. Concerts, football matches, temporary exhibitions, and markets upon markets fill the public space, contrasting old and new, temporary and permanent. This seminar is intended to get students out of the studio and into the city to observe and engage with these lively spaces through a series of field studies. Students in the course will explore the city and document their observations through various media and techniques, including drawing, printmaking, scanning, and model-making. Using techniques adapted from graphic novels, painting, and traditional and contemporary architectural drawing, the final project will take the form of a field guide that frames Florence as a living system, focusing on themes of mobility, permanence, exchange, and daily life.

Credit 1.5 units.

### A46 ARCH 385B Beyond Words, Beyond Images: Representation After History
The seminar focuses on art in the public domain and examines contemporary practices that engage public memory and the metacity. Prompting students to consider their own practice in the context of public space, this seminar offers examples of projects that contribute to the global cultural and political discourse. Weekly illustrated lectures, readings, writing assignments, screenings, discussions, and individual research lead toward the final term paper. Individual studio consultations serve as a platform for the discussion of student’s evolving practice, which culminates in a final project in a medium of choice. MFA VA students and graduate students in architecture are especially welcome.

Credit 3 units.

### A46 ARCH 388A Architecture Portfolio Design
Architecture portfolios play an essential role in framing and presenting work in both academic and professional contexts. More importantly, through the reflective act of re-presenting images and texts, students can begin to define their positions in the field and direct the course of their careers as architects. Architecture Portfolio Design facilitates the production and development of a comprehensive portfolio and covers the essential concepts and techniques at play in contemporary portfolio production. Over the course of 8-weeks, we will do the following: 1) perform close analyses of groundbreaking architectural publication designs; 2) assemble, organize, and evaluate portfolio image and text content; 3) profile the key academic institutions and employers with which students are most interested in engaging; 4) define the target audience to better frame content for that audience; 5) review portfolio organization as well as page layout and hierarchy of image and text; 6) perform an intensive review of student written project descriptions and related captions; 7) review tactics of digital display and physical distribution; 8) invite widely published architects and graphic designers in the Sam Fox School to portfolio reviews; 9) invite a panel of students that have prepared successful portfolios to present and share strategies; and 10) tangentially address curriculum vitae, work samples, web and social media accounts, reference letter requests, essays, and letters of intent.

Credit 1.5 units.

### A46 ARCH 396B Making Things That Function
Heidegger identified “things” as what objects become once they cease to perform their function in society. In this course, we seize that moment of dysfunction as a point for creative intervention. Students will design and make functional objects that engage the body with intention. The meaning of function will be debated so that students develop a definition based on their own values. Highly exaggerated, specific, or experimental works will be encouraged. Techniques for metal fabrication, simple woodworking, and mold-making will be taught in class, as needed. No previous experience is necessary. This course will benefit designers, artists, architects, and engineers, and it will explore the intersections of design and making among these fields. Prerequisite: 3D Design, Architecture 111 studio, or permission of instructor.

Same as F20 ART 396B  
Credit 3 units. Art: FAAM, FADM

### A46 ARCH 400A Design Foundations Studio
This is an intensive three-week program that introduces incoming students to the pedagogy around thinking and making through an introductory studio exercise. Enrollment is open to first-semester MArch 2 students only.

Credit 3 units.

### A46 ARCH 401B Color in Architecture, Design and Art
Credit 3 units.

### A46 ARCH 402A Measured Representation
This course proposes to investigate and create a series of measured drawings. The drawings, as architectural objects, configure architectural knowledge, perception and vision. We will begin by studying precedent drawings in relation to each architect’s theoretical framework, project description and technique. The range of works will relate different types of construction (perspectives, axonometrics, diagrams, ideagrams, assemblages, montages, descriptive geometry, and mapping) with integral and symbiotic theoretical agendas. Each student will learn the techniques of representation in their case study and from this example construct an interpretation of a specified site in this language. With a collection of theoretical frameworks and workshops on various techniques, the class will qualify a series of sites through drawing/interpreting the shadows present. Shadows may be thought of as
reductions of the real object - in this sense, the drawings will act as abstractions or reductions that promote vision. Instead of simply discussing qualities of space, narratives of metaphor, intangible phenomena, implications of constructed geometry, this architectural research project attempts to propose methods of seeing such that the representation may play a more active role in the shaping of design. This course centers on the creation of imaginative processes of representation.

A46 ARCH 404 Advancing Integrated Sustainability
DO YOU WANT TO WORK DIFFERENTLY? TOWARD MORE EFFECTIVE OUTCOMES? This course is a call to students from ALL DISCIPLINES with the conviction that it is necessary for us to WORK TOGETHER WHILE CONTRIBUTING FROM OUR SPECIFIC FIELDS OF STUDY to find solutions to challenges in our BUILT ENVIRONMENT. You will APPLY THE KNOWLEDGE BASE you acquire in this course to FORMULATING IDEAS FOR ACTUAL COMMUNITY PROJECTS in ST. LOUIS. Students will learn to INTEGRATE and APPLY a holistic range of technical and technical systems inspired and optimized by models in the natural world. A foundation in natural and bio-mimetic systems will be overlaid with analysis of corporate mission, principles, and triple bottom line thinking in order to learn how to build defensible, value-based arguments for implementation of sustainable systems. With the expressed intent of achieving net positive outcomes in the built environment, the following topics will be addressed: brownfield property reuse; storm/wastewater management; urban heat island management; air quality; potable water issues and opportunities; material cycles and flows including embedded energy, emissions, toxicity, virgin vs. recycled content and waste diversion; energy efficiency and renewable energy opportunities; transportation, accessibility and mobility choices; vernacular and cultural expression; local and healthy food availability; fitness advocacy and other health issues; education; public outreach and transparency; governance; and the economics of these systems. Lectures, case studies, readings, and class discussions will support application exercises and experimental projects to propose ideas for improving the built environment at multiple scales. Assignments will be reviewed often to assist each student’s learning and questions. Complementing leading edge theory with practical outcomes will be provided with the intention that students will develop valuable skills to be incorporated in their other academic projects. Please see www.wu/samfoxschool/A46-404ARCH...TBD.edu for work samples and student manifests from previous classes.

Credit 3 units.

A46 ARCH 404C Topics in Architectural Entrepreneurship
Entrepreneurship has become a very important issue for businesses small and large. What can the profession of architecture learn from these ideas? Topics in Architectural Entrepreneurship, a course offered in partnership with the Skandalakis Center for Entrepreneurial Studies, offers students a chance to gain exposure to the entrepreneurial ideas that are involved in the production of culturally significant, creative work, that also supports a larger social mission and apply this research to their own proposal. Each proposal shall be developed into a business / sustainability plan that will demonstrate the value of the proposal and explain the resources required to meet specific goals. This course will introduce students to the uncertainty that is inherent in the entrepreneurial process. Students will work to develop skills to evaluate ideas in relation to their personal values, the idea’s ability to address a specific problem, and the resources required to implement a sustainable solution. The process will help students to navigate the uncertainty and assess the risk associated with implementing their proposal through morphing the idea concept, seeking advice, and building a coalition of stakeholders. This course is open to disciplines outside of architecture. Students in Art, Social Work and Engineering are encouraged to register.

Credit 3 units.

A46 ARCH 404D For Purpose: Art & Design as an Ethics-based Model of Entrepreneurship
Working from the premise that art and design have the ability to enrich and transform lives and communities in a tangible way, students will redefine social, environmental and cultural problems as opportunities. Students are encouraged to bring ideas that have the potential to address these problems through the creative processes of art and design. Students will work in teams to develop a proposal for a project, product, or service-based organization with the potential to address a specific issue. Students from will draw lessons from researching established individuals, companies and not for profit organizations that are involved in the production of culturally significant, creative work, that also supports a larger social mission and apply this research to their own proposal. Each proposal shall be developed into a business / sustainability plan that will demonstrate the value of the proposal and explain the resources required to meet specific goals.

This course will introduce students to the uncertainty that is inherent in the entrepreneurial process. Students will work to develop skills to evaluate ideas in relation to their personal values, the idea’s ability to address a specific problem, and the resources required to implement a sustainable solution. The process will help students to navigate the uncertainty and assess the risk associated with implementing their proposal through morphing the idea concept, seeking advice, and building a coalition of stakeholders. This course is open to disciplines outside of architecture. Students in Art, Social Work and Engineering are encouraged to register.

Credit 3 units.

A46 ARCH 404E Design: Urban Ecosystem Principles Integration
In today's world, your discipline has grand challenges whose solutions often lay in other realms. How will you train yourself to leverage the interdisciplinary partnerships required to innovatively solve and evolve in a rapidly changing world? The mission of this interdisciplinary course is to "Advance the interrelationships of ecological and human systems toward creating a healthy, resilient, and biodiverse urban environment", and will bring together experts and students in ecology, urban design, architecture/landscape architecture, economics, social work, and engineering, drawing from inside and outside the WU community. Building from our knowledge of ecosystem principles and function, a diverse group of leaders in their fields will provide lectures, readings, and student project leadership to understand and test Healthy Urban Ecosystems Principles among human and ecological (non-human) systems and the range of sociopolitical processes entailed with their implementation. Class content is developed by Washington University leaders in their disciplines as well as external organizations such as the Missouri Botanical Garden, the Field Museum in Chicago, and others. This course builds upon a 1-credit seminar (not a prerequisite) that introduces challenges and solutions to achieving healthy urban ecosystems, and provides students an opportunity to more deeply engage and manipulate the interrelationships of symbiotic urban systems and apply those concepts in multidisciplinary project applications. Projects will leverage student-defined challenges in the evolving laboratory of urban St. Louis using Healthy Urban Ecosystems Principles to develop multidisciplinary integrated solutions to challenges encountered in urban areas such as climate change and resilience, security of ecosystem services, social inequity, economic strife, and community vitality. Students will present their work in a public forum at semester's end.

Same as IS0 INTER D 405
Credit 3 units.

A&S IQ: SSC Arch: SSP EN: S

A46 ARCH 405D Furniture Design
The course will focus on the design of tables using wood as the primary material in response to "rational and irrational strategies" (systematic and emotional). Each student will design, develop and build prototypes of two tables using the same material. One table will be the product of
a systematic analysis of material qualities, production procedures and other constructivist principles. One table will be the product of more explicitly intuitive, emotional and interpretive responses to the nature of the material and its production. Course limited to 10 students. Credit 3 units.

A46 ARCH 405H Sustainability Exchange: Community and University Practicums
The Sustainability Exchange engages interdisciplinary teams of students to tackle real-world energy, environmental, and sustainability problems through an experiential form of education. Students participate in projects with on- or off-campus clients, developed with and guided by faculty advisors from across the University. Teams deliver to their clients an end-product that explores "wicked" problems requiring innovative methods and solutions. New and varied projects are introduced each semester. Past projects have included conducting greenhouse gas inventories for a community organization, developing a tool to screen University investments for sustainability parameters; developing a sustainability plan for a local nonprofit addressing water savings initiatives for local breweries; and assessing the vulnerability of city sanitation systems. Team-based projects are complemented by seminars that explore problem solving strategies and methodologies drawn from a wide range of creative practices, including design, engineering, and science, as well as contemporary topics in energy, environment, and sustainability. Students will draw on these topics to influence their projects. The course is designed primarily for undergraduates, with preference given to seniors. Same as ISO INTER D 405 Credit 3 units. A&S IQ: SSC Arch: ETH, S, SSC Art: CPSC, SSC EN: S

A46 ARCH 407A Digital and Analog Fabrication
Digital and Analog Fabrication (Aperture Systems) explores contemporary fabrication methods for architectural design. We will develop and employ digital and manual fabrication techniques, including casting, thermoforming, 3-D printing, laser-cutting, and CNC milling, for a semester-long design project. Students will have opportunities to work with a variety of tools in the shops and digital laboratories to develop a full-scale kinetic prototype of/for a door/window/portal/aperture system. No previous fabrication experience or expertise is required. Credit 3 units.

A46 ARCH 407B Dynamic Materialism and Urbanism
Dynamic Materialism and Urbanism is a course developed for students who are interested in emerging technologies and digital production. The course develops and tests experimental design processes in architecture and digital media by enhancing 3D technologies, and it allows each student to adopt abstract thinking and making processes. This course develops digital design skills with the conceptual understanding of the transformative awareness of the artistic production of computational processes, which can inspire new forms of architectural conditions. The current developments in digital technology allow mathematical expressions to transform complex generative systems, which have shifted the formal discourse of architecture. The new digitally based techniques are being invented to inform creative processes in architecture through the manipulations of complex geometrical and topological forms. This course will focus on developing new techniques that translate these mathematical developments into diagrammatic design strategies. The generative modeling techniques will be deployed by the students for this investigation. Students will develop a complex set of massing strategies with conceptual development for defining and inventing dynamic-based architectural proposals within an urban context. Through digital modeling and mutating architectural strategies, each student will develop a transformational condition of a new emerging design. The new architectural forms are to be modeled through CAD/CAM (laser cutting) and rapid prototyping (3D printing) for physical outputs.

A46 ARCH 407C Mixed-Reality Fabrication
The translation from digital design to physical construction has long presented challenges and opportunities for architects, engineers, technologists, artists, and contractors. Mixed-reality is a prodigy of overlaying virtual objects in real-world space. Wearing a Hololens or similar assists construction workers to accurately locate the correct parts where they are needed. In lieu of using robotics, humans are already quite adaptable for different types of construction and mixed-reality enhances their skill and precision. While accuracy and efficiency are benefits to the contractor, the benefit to architects is allowing for non-standardization to be more easily incorporated in the design. The course will explore the use of mixed reality in half-scale to full-scale fabrication prototypes to understand its challenges and benefits. Credit 3 units. Arch: ETH, NS

A46 ARCH 407F Fields and Frames
The 3D printer is widely known for its ability to produce models with endless variation and customization, and its output is typically characterized as precise, fixed, and immaterial. However, when combined with clay, a soft, visceral material that slumps and oozes when extruded and layered, the 3D printer’s tectonic language becomes highly idiosyncratic. This course will investigate the use of ceramic 3D printing for a collaborative temporary public artwork with a community partner. During the seminar, students will use Potterbot ceramic printers to explore 3D printing with clay in tandem with an investigation of the architectural frame that structures the artwork. With new materials and digital fabrication technology, we have the potential to rethink the relationship between structure and frame. Students in the course will engage in a rigorous workflow focusing on the relationship between designer, tool, material, and frame. Over the course of the semester, students will engage in a series of assignments and tutorials intended to create a strong understanding of the methods for robotic deposition and working with clay while also challenging the prominence of precision and control associated with digital fabrication technology. Central to the class discourse will be the exploration of the relationship between the highly articulated frame and the field of ceramic components, focusing on notions of authorship, precision/imprecision, loose fit, scale, and tolerance. Additional coursework will include drying and firing clay components, post-printing physical manipulation, staining and glazing techniques, clay body research, and full-scale prototyping. Proficiency in Rhino is a requirement for the course. Credit 3 units. Arch: ETH, NS

A46 ARCH 408J Performance Enhancing
The term Performance has many meanings that are either quantitative, qualitative, or both simultaneously through a range of design professions. The suggested goal of Performance is an optimistic enhancement to a designed entity or idea and holds the potential to be highly provocative relative to the method it is deployed when arguing for a particular design procedure or effect. The double entendre suggested by the term performance relates to both how the system technologically improves a functional aspect along with a more theatrical act of performing. Design in both architecture and fashion relies on both interpretations to create a multi-dimensional discourse necessary to advance conceptual design investigation. The seminar class will explore issues of performance of complex surfaces at the scale of the human body. The class will consist of lectures, discussions, readings, physical material manipulation, and 3D digital modeling and digital fabrication. The use of Rhino (with T-splines and / or Grasshopper) or Maya will be deployed for the digital design of the skin systems. Material systems will be explored initially through manual experimentation and then combined with the digital investigation for the final a digital fabrication using tools such as 3D...
printing, lasercutting, CNC milling, and thermoforming, resulting in a final garment for the human body. The class is offered to both fashion and architecture students and the investigations would occur in teams of two where ideally one from each discipline is represented. Credit 3 units.

A46 ARCH 408M Atmospheric Animations
This course will explore the capacity of modifying perception, as a way of thinking and making in design process. We recognize the ambient complex environment base on the concept of each element in space as a figure of motion, being sensitive to a specific period of time. Each student will begin with selecting a certain way of observing, and developing a method to document and analyze a piece of dynamic perception which will then be re-constructed through drawings or models, primarily focusing on one aspect of the experience, such as material performance, light reflections, air flow, etc. Final part of the project will be representing the synthetic perception, by creating the atmospheric imagery in motion. Students will be introduced to various techniques of recording ocular perceptions with the aid of digital tools, 2D representation, 3D modeling and animation rendering throughout the course both as general workshops and individual project basis. Credit 3 units.

A46 ARCH 408N Mapping Complex Spatial Sequences
New methods of spatial practice have changed the way architects and designers work. As designers, we are no longer tied to static, projection-based drawings as a means to develop and represent our ideas. Time based digital imaging allows us to simultaneously examine the narrative, formal, experiential and spatial aspects of a particular place. Students will map a site through digital photography focusing on a specific spatial sequence much like how a director would set up a scene, moving fluidly from one space to another. During the first half of the semester, this spatial sequence will be used to create a drawing of the entire site as one multilayered composite image with particular attention to the interaction of time, space and movement. The site will then be reconstructed digitally through models or drawings, using the composite drawing as base. Finally, relationships between the drawing and model will be outlined resulting in a more complete experiential spatial sequence. Credit 3 units.

A46 ARCH 408P Building Performance for a Solar Powered House
We will study the state of the art of building integrated solar systems, and design such a system for a house and assess its performance using computational tools. Topics include the fundamentals of solar energy systems, energy management, and its implications to design, either passive or active approach. The course involves building performance simulations using Ecotect, Energy+, HERS, and other tools. Students will use simulation data to study the relation between design and its performance. The course will consist of lectures, review, and student projects. The course will be parallel with several Engineering courses, including ESE 437: Sustainable Energy Systems and EECE 428: Sustainability Exchange. Projects will involve teamwork with Engineering students of different backgrounds. The course will contribute to Team WUSTL solar decathlon with the following features: Energy efficiency; passive design; high performance enclosure; Net-zero energy; renewable energy; heat recovery; Sustainability: water recycle; carbon neutral; lean construction; Resilience: prefabricated house to mitigate natural disasters; Smartness: advanced sensors network; energy management; data visualization; Human-centered living adaptability: flexible space; human comfort and perception controls to operate the house to improve productivity and health; An interdisciplinary effort for renewable energy and sustainable buildings. Credit 3 units.

A46 ARCH 408Q Fabricated Drawings
The course will focus on digital fabrication tools, techniques and image theory to uncover new methods of producing physical images. Images are built in a myriad of methods including physical media or from data. Physical images, as defined in the context of this seminar, will be transcended a 2D limitation to develop thickness. The increase to 2D or 3D opens opportunities to investigate the use of digital fabrication tools to construct images. In particular, the class will focus on the way information technology continues to have a profound effect on the way we perceive our built environment and the way we represent it. The images that surround us are becoming increasingly easy to generate through information technology. Access to technology both in terms of digital design and output affords the opportunity to reconceive the nature of images. Images are developed through analog, digital or hybrid processes. Their generation is a collaborative interaction between intuition and information processes through clearly defined rules. The scientific theoretician, Peter Galison, discusses the tension between intuition and information on the nature of images in the arts and sciences. Images reveal the intricacy of relations and knowledge, but they are simultaneous deceptive because they bypass the mathematics of pure science. The tension in the arts tends to be between the intuitive, interpretive ability of images as representation versus the imputation of a computation-based process. Architectural theoretician Mark Linder talks about how images in architecture are moving away from representations of something else toward a more literal and non-idealized result of a procedure. The image is literally the process of making visible the end result of an operation. Therefore, images are the evidence of the process by which they were generated. As such, the class will develop innovative processes for our digital fabrication equipment to construct images. The projects will develop new methods to use the CNC mill, laser cutters, knife plotter and 3D printer. New tools may need to be developed and built to enable the image fabrication process. In parallel with technological development is material experimentation. Students will be highly encouraged to test new materials to program their behavior and interaction with technology. Credit 3 units. Arch: ETH, NS

A46 ARCH 408R Intelligent Prefabrication
Digital Fabrication is often critiqued as not being scalable to larger projects since it is often associated with highly specialized small prototyping and installations. The seminar will focus on digital fabrication at the medium to large scale using a proprietary system designed by Scott Mitchell, alumni of Wash U and founder of Stud.io. The system focuses on intelligent prefabrication using custom parametric software to create series of robotically fabricated metal studs that can be easily assembled into almost any form. The CNC machine is specifically designed to make these custom metal studs with a series of operations, promoting mass-customization. The seminar will develop full-scale prototypes. Credit 3 units.

A46 ARCH 409C Watercolor Painting for Architects, Urban Designers & Landscape Architects
This class will introduce students to different techniques of watercolor painting. The class will focus on teaching students the basics of material selection (paint colors, brushes, various papers), proper paint blending/mixing techniques, creation of unique color palettes, and both smooth wash techniques and painterly brush effects. Students will learn to render site plans of their own project work. There will also be an optional afternoon of pure sketching with paint. One objective is to teach students the methods to create beautiful renderings so that they may choose to apply the techniques to their final studio illustrative work (at the discretion of the student). Grades will be based upon class participation, effort, and final watercolors. Fulfills Analog elective requirement. Credit 3 units.
A46 ARCH 409E Architectural Sketching
An introduction to architectural sketching - a graphic communication skill that architects and designers use to analyze and document their environments, and to visualize design thinking and creative process. Many class sessions will meet on site, drawing directly from observation. The first part of the semester will focus on fundamentals of sketching through the study of existing buildings, their contexts, and interiors. Students will expand and refine their observation skills as they use the architectural sketch as a mode of research - exploring elements of architecture: form, material, light; and the relationships between building and context, and building and interior. The second part of the semester will expand to include the architectural sketch as language. Students will learn to use the architectural sketch to explore, confront, develop, and translate abstract ideas into visual narrative, creating a record of design thinking and creative process. Students will be registered for the course from the waitlist by the Registrar's Office. Priority will be given to undergraduate students. Prerequisite: Drawing I (X10 XCORE 101) or graduate architecture standing. Credit 3 units.

A46 ARCH 4102 Lively City: Behavioral Studies & Public Space Design
Working in small groups, students will acquire new perspectives and skills that put people and their needs at the heart of the creative process of re-imagining and transforming cities. Livability, lively cities, public life, and other concepts describing inviting, vibrant, and social stimulation. Open to all graduate students. Master of Urban Design students receive priority. The completion of both the Informal Systems elective requirement for MArch students. May fulfill the Urban Issues elective requirement for MArch students. Credit 1.5 units.

A46 ARCH 411B Architectural Design V
The third and fourth years introduce a selection of option studios to students. This year emphasizes voice as students adopt their own conceptual position through the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on advanced architectural design and an in-depth study of a specific topic through rigorous design development. Prerequisites: Successful completion of A46 111C or A46 144, 112C, 211D, 212D, 311B, and 312B with a grade of C- or better. Credit 6 units.

A46 ARCH 411F Architectural Design V (Florence)
The third and fourth years introduce a selection of option studios to students. This year emphasizes voice as students adopt their own conceptual position through the iterative development of form, geometry, space, and aesthetics. More specifically, this studio focuses on advanced architectural design and an in-depth study of a specific topic through rigorous design development. Prerequisites: Successful completion of A46 111C or A46 144, 112C, 211D, 212D, 311B, and 312B with a grade of C- or better. Note: Only students in the Florence study abroad program may register for this course. Credit 6 units.
and political structures, including speculative urban-scale designs by Ebenezer Howard, Frank Lloyd Wright, Le Corbusier, Tony Garnier, Mirà Alfàssia, Paolo Soleri and others, as well as architectural projects envisioned by Fuller, Oscar Niemeyer, Minoru Yamasaki, Archigram, Kisho Kurakawa, Russian and Yugoslavian communist designers and others. Lectures will be coupled with field work at local sites enmeshed in concepts of utopia and dystopia, and students will develop their own speculative work presenting contemporary visions of utopian design.

Credit 1.5 units.

A46 ARCH 421U Urbanism: Chicago

This design research seminar will focus on the urban infrastructure and associated buildings of central Chicago, in and around the areas near the Loop. The Chicago metropolitan area is the third largest in the United States, and from 1870 until the 1950s, Chicago was America's "second city," surpassed in size only by New York City. It remains the densest and most "urban" of the cities of the Midwest, with many examples of complex interconnections between rail lines, highways, and various kinds of pedestrian-oriented urban environments. This seminar will combine historical and field research on some of the many architectural urban design interventions in Chicago. Students will have the opportunity to produce detailed drawings and digital models of specific urban interventions. There will likely be a publication of the work. Topic areas for digital documentation include the pedestrian relationships between transit lines and various buildings and urban complexes, including the large Millennium Park interventions by SOM and others over the Illinois Central railway line adjacent to Lake Michigan, and Wacker Drive, a 1920s underground limited access highway along the Chicago River, and other projects. Fulfills History/Theory and Urban Issues elective requirement.

Credit 3 units.

A46 ARCH 421V Unbuilt Sert

This design research seminar will focus on the digital simulation of the unbuilt architectural design projects of Josep Lluís Sert (1901-83). This spring we will document and analyze Sert's drawings for St. Bololph’s, a Chapel (1963) designed for the Boston Government Center complex with the goal of virtually "building" it. Sert practiced in Barcelona in the 1930s during the era of the Spanish Republic and later in the U.S. as both architect and planner. He was the President of CIAM (International Congresses of Modern Architecture) from 1947-56, and Dean of the Harvard Graduate School of Design from 1953-69 where he developed urban design as a discipline and academic program. The chapel was an effort to combine elements of Catalan modern architecture with his concept of a modern "New Monumentality" suitable to the postwar world. The seminar will also include Sert's major built projects in the Boston area, and will include presentations by Dean Emeritus Edward Baum, who was job captain on the St. Bololph’s chapel project with the Sert, Jackson firm. Students will work in teams to produce detailed digital models of the project to simulate the "built" chapel inside and out. Publication of the work is anticipated.

Credit 3 units. Arch: GACS

A46 ARCH 421W Designing the Modern City

This course, which is based on the textbook Designing the Modern City: Urbanism Since 1850, is a lecture course that examines designers' efforts to shape modern cities. Topics covered include the technical and social changes in mid-19th century industrial cities, notably London, Paris, and Barcelona, as well as varied efforts to shape urban extensions and central new interventions elsewhere. These include reform housing efforts for the working class in 19th-century London and New York, Städtebau (city building) in German-speaking environments, the Garden City Movement, the American City Beautiful movement, "town planning" in Britain, and "urbanisme" in France (the source of the contemporary term "urbanism"). Less well-known topics that will also be addressed are urban modernization in East Asia before 1940 and suburban planning in the United States, including Frank Lloyd Wright’s Broadacre City. The book also addresses social change and modern urbanism in Europe in the 1920s, including the emergence of CIAM (International Congresses for Modern Architecture), which met from 1928 to 1956; the political, technological and urban transformations of World War II; the expansion of racially segregated decentralization in the United States; and some European and Latin American postwar urbanism. It also addresses urbanistic aspects of postwar architectural culture, including critiques of modernist planning by Jane Jacobs and others and more recent responses to the ongoing challenges posed by efforts to create organized self-build settlements and to make more ecologically sustainable cities.

Credit 3 units. Arch: GAMUD, GARW, GAUI, HT, RW, UI

A46 ARCH 421X Modern St. Louis, 1940 to 1974: Art, Architecture and Social Change

This seminar addresses the research question, "How did modern art and architecture become such a major aspect of St Louis's cultural life in the middle decades of the 20th century?" Offered in preparation for a fall 2022 exhibition on this topic at the Kemper Museum, the seminar will research this question, both by presenting notable works of modern architecture that were built here and by examining art collecting and philanthropy here during this time period, where new and more socially inclusive values then associated with modern art had a significant impact on changing both the political and artistic culture of this large metro region. Architectural works to be researched include the works of Harris Armstrong, Cloethiel Woodard Smith (a Washington University architecture alumnus); Samuel Marx; Frederick Dunn; Eric Mendelssohn; Eero Saarinen; Dan Kiley; Joseph Murphy and Eugene Mackey, Jr; George Hellmuth, Minoru Yamasaki and Gyo Obata; and Charles E. Fleming. Prerequisites: Architectural History I & II or equivalent.

Credit 3 units. Arch: GARW, RW
A46 ARCH 422J Confronting Urbanization: The Interactive Tissue of Urban Life
This course invites architecture and urban design students to explore the urban condition through the lenses of its interactive tissue -- a tissue that includes smartphones, the World Wide Web, credit cards, highway systems, airports, sidewalks, and indoor plumbing. Within this frame of reference, students are encouraged to investigate, unearth, and document with surgical precision the emergent interrelationships between actors, the agency through which actors engage with the interactive tissue, and the ways in which these actors and relationships shape and influence one another. With the understanding that ideas are generated through speculation, projection, and experimentation, we will use the third dimension as a point of departure toward the fourth dimension of time, and we will aspire to the fifth dimension of lived experience. It is most welcomed that students bring their curiosity to the course, that they are interested in being investigative, and that they are open to various mediums ranging from reading theories of urbanization, drawing, and experimenting with physical/interactive objects. To use projection as a tool to document their research in both analog and digital formats. The final product of this course will be a presentation during which students will present their research through multiple media outlets, which may include drawings, installation work, or moving images. Same as A49 MUD 422J
Credit 3 units.
Arch: GAMUD, GAUI, UI Art: CPSC

A46 ARCH 423 History of Landscape Architecture
This seminar will review the history of gardening in the Western tradition from the Renaissance to the present and in the Chinese and Japanese traditions. Park-making, neighborhood design, and the rise of landscape architecture as a profession will receive attention, including several classes held at notable St. Louis examples. Course requirements will include readings, a design or research project, and a final exam. Fulfills History/Theory elective. Credit 3 units.

A46 ARCH 423E Cinematic Landscapes: The Making Of
Watch movies. Talk about movies. Analyze the making of movies. Make a movie. Climate-themed movies. Post-apocalyptic movies. Meet in technology. Learn to scientifically use drones. Learn to scientifically use LIDAR. Use these tools in your climate-themed movie. Sculpt stories in time, supported by sound. This course will focus on the analysis of landscapes and cities as portrayed by popular cinema. How didic portrayals of nature and cities are circulated by popular cinema. Stories through which the values, common references, public concepts, and memes of a culture materialize through the construction of movies. Interior to the semester there is an interdisciplinary workshop. Four-day fieldwork with Geology Assistant Professor Alex Bradley. Map and produce digital representations at 2-cm resolution of a mountainside scoured by a burst reservoir. This class is divided into three parts: watch, learn, and make. Watch: Each week, students will be asked to watch one movie and one director’s commentary, often referred to in the "bonus features" as “the making of.” Learn: Students will study the methods and techniques used to create settings, props, and storyboards in the service of a sound vision. Make: Students will synthesize digital and analogue time-based media tools (sound and video) to make a movie thematically based on climate change. Same as A48 LAND 423E
Credit 3 units.

A46 ARCH 424M Spatializing Extremes: Graphic Explorations on Projected Climate Futures
As architects, we communicate through a language of visual representation. We use drawing as an act of translation - to spatialize ideas and information in a way that could arguably be understood universally. Furthermore, we use drawing as an act of persuasion - to convince others of our designs, positions, and intentions. In the culture of immediacy that we currently find ourselves in - an era where the image and the video dominate our scrolling - it's more important than ever to produce compelling graphics that aid in the dissemination of information. This course explores how architects can harness the power of architectural representation to construct spatial narratives of text-based research and data, particularly regarding the interdisciplinary science surrounding projected climate futures. We will operate contextually through a lens that does not try to prevent the extremes of climate change, but rather accepts these new realities that we have already begun to find ourselves in, that of extreme weather events, floods, droughts, sea level rise, plant & animal migrations, and human migrations, among others. How can we translate existing climatic research into compelling graphics? How can we persuade an audience of the need to adapt our built environment and existing infrastructures in the face of these alternate realities? From there, how can we speculate on these conditions in a way that compels different thinking surrounding adaptation and resilience? The course will explore these questions through the generation of narrative drawings, working iteratively through a variety of digital drawing techniques towards a composition deeply layered with multiples sources of information as well speculations on climatic futures. Same as A48 LAND 424M
Credit 3 units.
Arch: ECOL

A46 ARCH 427H The Crystal Palace
The seminar will seek a thorough acquaintance with the Crystal Palace, the structure that housed the Great Exhibition of 1851 in London. We will follow a timeline from the building’s origins in theories of art and society to its design and construction at Hyde Park, its opening, its exhibits, its wide publication in the media, its catastrophic fire, its reconstruction on a new site, and its final demise in 1936. We will examine the building’s structure and details and the extent to which project and building served to plan parts of the city and inaugurated a new type of space for the public display of objects. Looking at authors of this project, including Joseph Paxton and Owen Jones, we will explore the implied relationships between architecture and landscape and between architecture and the decorative arts, including the unsteady beginnings of design for mass production. We will revisit debates this building provoked concerning the nature of ornament and the very definition of architecture. In reviewing the building and its contents, we will ask questions about antiquarianism and the return of the temple as a symbol; about natural histories, techniques of inventory, and the context of the British Empire; and about the role the Crystal Palace has played in narratives of the history of modern architecture. Readings will include selections from Paxton, Jones, Ruskin, Semper, Pevsner, Hegel, Benjamin, Tafuri, Said, Ranciere, and others.
Credit 3 units.
Arch: GARW, RW

A46 ARCH 4280 Architectural History I: Antiquity to Baroque
This lecture course will introduce major historical narratives, themes, sites, and architects from ancient Greece to the end of the Baroque period. We will follow a timeline from the building’s origins in theories of art and society to its design and construction at Hyde Park, its opening, its exhibits, its wide publication in the media, its catastrophic fire, its reconstruction on a new site, and its final demise in 1936. We will examine the building’s structure and details and the extent to which project and building served to plan parts of the city and inaugurated a new type of space for the public display of objects. Looking at authors of this project, including Joseph Paxton and Owen Jones, we will explore the implied relationships between architecture and landscape and between architecture and the decorative arts, including the unsteady beginnings of design for mass production. We will revisit debates this building provoked concerning the nature of ornament and the very definition of architecture. In reviewing the building and its contents, we will ask questions about antiquarianism and the return of the temple as a symbol; about natural histories, techniques of inventory, and the context of the British Empire; and about the role the Crystal Palace has played in narratives of the history of modern architecture. Readings will include selections from Paxton, Jones, Ruskin, Semper, Pevsner, Hegel, Benjamin, Tafuri, Said, Ranciere, and others.
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Credit 3 units.
Arch: GARW, RW
A46 ARCH 4284 Architectural History II: Architecture Since 1880
An introductory survey of the history and theory of architecture and urbanism in the context of the rapidly changing technological and social circumstances of the last one hundred and twenty years. In addition to tracing the usual history of modern architecture, this course also emphasizes understanding of the formal, philosophical, social, technical, and economic background of other important architectural directions in a global context. Topics range from architects’ responses to new conditions in the rapidly developing cities of the later nineteenth century, through early twentieth-century theories of perception and social engagement, to recent efforts to find new bases for architectural interventions in the contemporary metropolis. Same as A46 ARCH 3284
Credit 3 units. Arch: HT

A46 ARCH 4288 Architectural History III: Advanced Theory
The third survey class focuses on architectural history and theory after modernism. It examines the rise of architectural theory as a field of inquiry and its links to both critical social theory – including the Frankfurt School – and to contemporary traits of philosophical postmodernity. From the contextual questions of meaning and memory to the examination of post-structuralism, cultural theory and identity politics - including race, gender and ethnicity - the course uses primary textual sources to illuminate drawings, buildings, and ideas that defined this seminal moment in architectural history. While the course closely examines this time period of intense search for a new visual language, it also probes contemporary complexities of architecture’s continued search for visual and social purpose in an increasingly interconnected world.
Credit 3 units. Arch: GARW, RW

A46 ARCH 428P Design Agendas: Modern Architecture in St. Louis, 1930s-1970s and Beyond
This seminar, offered parallel to the current exhibition at the Kemper Museum, will examine postwar modern art and architecture in St. Louis within the changing design and social contexts of the postwar era, which included massive spatial and racial transformations in this region. Using site visits, photographs, films, architectural drawings and models, and guest lectures, the seminar will bring together design and social documentation to understand this remarkable creative and conflicted period in St. Louis’ history. Students will present selected readings and pursue individual research projects for this course. Fulfills Master of Architecture History-Theory Elective Distribution Requirement for research and writing courses. Prerequisite: successful completion or waiver of A46 3284/4284: Architectural History II
Credit 3 units. Arch: GARW, RW

A46 ARCH 428R Urban Archaeology
In this course, students will learn about the potential of making meaning from urban architectural artifacts - remnants of buildings still standing, artifacts recovered from demolition and archival sources that invoke lost designs. “Urban archaeology” can redirect destruction and loss of the built environment into meaningful knowledge. What can fragments and traces teach us about the material culture, politics and ideas of architecture? The main focus will be the collection of the National Building Arts Center, the nation’s largest repository of architectural artifacts that is located in St. Louis. These artifacts - parts of demolished or extant buildings, drawings, catalogs and photographs -- come from St. Louis, Chicago, New York City and other places around the world. The course will provide an overview of architectural salvage, historic preservation and archive-making as architectural practices that are capable of producing meaning around loss and ruin. Students will work with artifacts through research, 3-D scanning, photographic documentation, drawing and interpretation. This course will help develop an exhibition of architectural artifacts at the Pulitzer Arts Foundation in Fall 2023.
Credit 1.5 units.

A46 ARCH 428U American Architecture and Urbanism
This seminar will focus on new ways of thinking about American architecture and urbanism in the 20th century. It is part of an effort to offer new conceptual frameworks to understand American architecture within its larger context of social, political, and urbanistic change. Unlike an architectural history survey course, it will not only focus on the canonical works of well-known designers such as Ludwig Mies van der Rohe and Louis Kahn, but it will also situate architecture within the various new social, spatial, technological, and legislative directions that have shaped American metropolitan areas since then. Students will present selected readings and pursue individual research projects for this course.
Credit 3 units. Arch: GARW, RW

A46 ARCH 430B Special Topics: Smart Residential Retrofit (Barcelona)
Amid the debate on climate change and still immersed in the effects left by the global pandemic of covid19, cities have a key role in defining possible and accurate solutions. This seminar aims to familiarize students with urban concepts and themes, such as urban fabric, public space, buildability, scale, paths and streets, mixed-use, density, mobility flows, zoning, urban renewal, gentrification, etc., and provide them with basic tools to describe, analyze and articulate proposals in urban contexts. Through field visits, theoretical sessions, debates, and practical exercises, the spectrum of urban issues and themes will be examined with Barcelona as an example and a living laboratory.
Credit 3 units.

A46 ARCH 430M Special Topics in History & Theory: Hidden in Plain Sight: How to Read a Building
This seminar is an exploration into the importance of autonomy, formal analysis and the rigorous use of architecture’s unique language in the service of an idea— all unrelated to “style.” The aim here is to demonstrate that in the best of architecture, in particular the Great (Conical) Works, there is an “intention” that can be “read” in the buildings. These readings demonstrate a recurring methodology that can represent a rigorous, timeless and comprehensive approach to understanding meaning in architecture from antiquity to the present. These intentions, which can be expressed as diagrams, are hidden in plain sight. They are not, in this context, diagrams of information that simply depict program, geometry, structure, circulation, etc. The course will be comprised of lectures, reading assignments, in-class discussions and drawing exercises. The lectures will introduce specific examples of the language of architecture. Using this language, students will analyze individual structures as well as compare buildings side by side. These comparisons will include buildings that come from different historical periods, look nothing alike, yet share the same basic diagram, as well as buildings that appear to resemble each other, yet are fundamentally different. The goal is to learn to read buildings, to see in a deeper way, and to use that skill to analyze, refine, and correct one’s own work.
Credit 3 units. Arch: GARW, RW

A46 ARCH 430N Special Topics in History & Theory: Learning From Pruitt-Igoe
This seminar examines the design and adaptation of ordinary inhabitation, taking as its starting point the Pruitt-Igoe housing project in St. Louis. Did this housing project succeed or fail as architecture? The question may have been asked for the wrong reasons. We will examine whether Pruitt-Igoe fulfilled the United States’ government’s goal of
creating modern, effective mass housing for working-class Americans. The path to an answer will examine the tangle of architectural modernism (and its critics), vernacular architecture, US housing policies and ideological shifts within architecture itself. The seminar will investigate the career of architect Minoru Yamasaki, precedent tenement housing forms and other social mass housing projects in the United States and Europe. Ultimately, students will complete research on whether or not it is possible to (re)claim Pruitt-Igoe as a successful architectural endeavor by understanding what housing forms it was intended to replace and what has come after.

Credit 3 units. Arch: GARW, RW

A46 ARCH 431A Architecture in the Age of Identity: Race, Gender, Ethnicity and Their Discontents

Identity is both an individual and social category. It is deeply personal, woven with memories, feelings and emotions, but also collective, informed by history, society and culture. Consequently, this gap between individual self-expression and societal conformity remains one of the fundamental tensions of human existence, but also a source of inspiration and imagination in our rapidly changing world. Categories such as race, gender, class and ethnicity-as well as their intersections and overlaps-remain dynamic. They constantly evolve, responding to the changing socio-economic context and engaging an ever-expanding array of cultural production-from literature and film to philosophy and sociology. This course expands the conversation even further, examining the relationship between design and identity in architecture, with a particular emphasis on architectural education. Covering a range of case studies that emerged after World War I, the course moves freely across various divides-between North-South and East-West, between socialism and capitalism-examining the representation of identity through a variety of architectural media, including drawings, texts and buildings. The course probes architecture schools and practices as both disciplinary enterprises and as hubs of identity formation, suggesting the capacity of equity and representation to serve as agents of both political and architectural emancipation. The course content includes lectures, discussions and presentations, as well as reading and research. The course is open to both undergraduate and graduate students and it has no pre-requisites.

Credit 1.5 units. Art: CPSC

A46 ARCH 431B Modern Architecture, Race, and Ethnicity

This course will review the issues mentioned in the title as represented in recent literature and historical examples, focusing mainly on the urban context but more on architecture than urbanism. Themes will include the history and theory of architecture, architecture as art and as service; architecture and social class; and technology and intersectionality. An emphasis will be placed on information literacy, including the use and management of primary and secondary sources, accessed digitally. Assignments will include a series of short papers and a final paper. Space will be reserved for undergraduates. Prerequisite: Architectural History II or equivalent.

Credit 3 units. Arch: GARW, RW Art: CPSC

A46 ARCH 434J Immeasurably Small and Inconceivably Immense

The path one takes when ‘following the materials’ is not a linear one. Rather, one encounters complex and anachronistic layers, incorporating references that point beyond canonical boundaries. This course is the second installment of the “media and materiality” seminar. In addition to mapping the genealogy of the formation of materiality as a concept, this course brings up notions of matter and materials, dematerialization, immateriality, intermateriality, transmateriality, and material in-formation in contemporary media studies. We will continue our investigations of way that “media mediate material relations” and explores possibilities for the media to be understood as varied environments. The course format consists mainly of small lecture sessions and active reading discussions which are moderated by the faculty but led by the students. In addition, there is a semester long and hand on “materiality in-formation” project. Through this project, we will utilize visualization and 3D projection mapping to bring focus on the moments when “materials leave behind the confines of their conventional roles and become willful actors” to engage the audience with layers of critical fabulation about potential futures of eroded pasts, roads not taken, and stories untold.

Credit 3 units.

A46 ARCH 434Y Precarious Structures: Composition/Anti-Composition

This design seminar will explore the construction of architectural compositions as time-based events using motion graphics, physics engines and scale models. Design exercises will be supplemented by readings and lectures that track intersections between abstract painting, color theory, choreography, video game physics, and architectural space. The suite of digital videos and models generated during the course of the workshop will make an argument for animation software as an architectural-form-generation technique. This workshop is designed as a visual-studies-focused exploration of mixed assemblages. In his recent text entitled “Bad New Days: Art Criticism, Emergency,” theorist Hal Foster analyzes contemporary visual artists like Thomas Hirschhorn and suggests the term “precarity” to describe one of the major emerging themes in post-2001 art; this is a meta-category that he puts forward alongside the abject, mimetic, archival and postcritical. These terms, Foster suggests, might replace the postmodernist overprivileging of images and language. Following the work Foster highlights in his text, we will engage with what sculptor Robert Morris calls “anti-form”: the material and optical territory of the formless (all that is horizontal, unconstructed, and otherwise base). It is without doubt that the specters of postminimalism-- Alice Aycock, Robert Morris, Eva Hesse and Mary Miss, for example-- loom large in contemporary aesthetic research. This pervasive (if underarticulated) interest in base materialism, elemental tectonics, and provisional structures owes much to the antiformal revisions of minimalism that these artists celebrate in their work (so many piles, ruins, stacks, stick-frame forts, huts, and shelters). Can architecture revitalize these types and add elements (spatial, economic, political and technological complexity) to the sculptural articulation of precariousness? Can we design with formal provisionality at the forefront? Requirements: Beginners with no background in the following platforms are welcome. However, some familiarity with Rhino 3D, the Maya platform, and processing will be helpful.

Credit 3 units.

A46 ARCH 435E Furnish It, With Pieces

Public space is a key constituent that determines the character of a neighborhood and a city. It is embedded the urban fabric and it can mediate the relationship between people and their particular surrounding landscape. Urban furniture and hardscape can play an important role in offering a wide range of uses for public spaces. The design of such pieces affects the way people live and experience a particular environment. The ultimate goal of this course is to design, fabricate and install a set of repeatable units to equip a vacant urban lot in order to offer opportunities for social interaction. The seminar focuses on the in-depth understanding and development of ideas based on the technical and experiential exploration of raw material: concrete, into one specific application: urban furniture. This seminar builds up on the scope of the Creative Activity Research Grant awarded by the Sam Fox School of Design & Visual Arts where 5 porous concrete pavers were designed for a vacant plot in North St. Louis. The challenges are to adapt the given pavers to a new site condition and to propose new units of furniture made out of concrete. It follows the construction of pieces able to equip a gathering space as well as sidewalks that can offer local residents the opportunity to interact with others. This provides not only aesthetic appeal to the residents and visitors, but also allows the possibility of implementing an actual project in an abandon plot in Old North. We will enrich the community
with a wide range of training opportunities as each step in the process of making the plaza will be used for teaching purposes, from making pavers and other pieces, to salvaging, reusing or repurposing recycled material. Students are asked to design and build concrete urban furniture necessary for the gathering area. The pieces can encompass a wide range of uses: chair and benches, tables, raised beds, planters, litterbins, modular fencing and mobility-related pieces such as bike racks, bollards and car stoppers. This is an opportunity for hands-on experience. These pieces have to consider the limitations of the material in terms of strength, weight, size, etc.; learning about the material itself as well as the act of construction, assemblage and mass production, which will include methods and technology, ranging from tools to molds. The formwork for the concrete pieces will be built through a process of CNC milling and rubber molds or vacuum formed plastic. The challenges are to define environmentally sensitive strategies for problem solving, conceptual development and poetic expression at both levels of the design process, conceptual and real. Sustainable principles such as the use of recycled materials as an aggregate in the concrete mix will be an important consideration. Construction is the ultimate goal of this class. We will be working in collaboration with Anova, a local manufacturing company dedicated to the design and production of site furnishings. Anova will provide some materials and bring their expertise to the project. Credit 3 units.

A46 ARCH 4362 Advanced Grasshopper
With a base knowledge of the Rhino+Grasshopper interface, this class will focus on developing an entirely scripted building system. Each student will be given a set of initial parameters (building volume, square footage, percent of transparent/opaque facade, required programmatic elements/size, etc.) They will begin by selecting a formal precedent that will help them determine a structural system. Within this framework, students will develop an algorithmic logic to organize program and then articulate a responsive skin. The goal of this exercise will be to develop understanding of the potential use of scripting in design. Scripting allows the designer to transform their design dynamically as the parameters change or update. The final output of this class will be detailed, annotated drawings of each student’s structural system as well as a 1/4" scale model of a small portion of their design utilizing available tools in the FabLab such as 3D printing and CNC routing. Students taking this course must have working knowledge of Grasshopper. This class is an advanced class exploring design through generative modeling. Credit 3 units.

A46 ARCH 436A Information Modeling & Technology
This foundation-level course will introduce students to the digital tools of Geographic Information System (GIS), Building Information Modeling (BIM), and Building Performance Analysis (BPA). Its goal is to equip the student with the ability to gather information, analyze it, and make decisions within the information-rich environment of architectural design and construction. Students will develop an understanding of these three seemingly distinct approaches and their role in preserving the quality and quantity of accumulated information for ‘upstream’ use. The topics addressed in the course will be further developed in more advanced courses during subsequent semesters. The introduction of information-gathering principles within GIS will expose students to the wealth of information, such as maps and census data, that is already available, as well as methods of turning raw data into analytical material for use in their design work. This segment of the course not only provides a foundation to ArcGIS, but also leads toward use of this information within applications like Revit Architecture. Creating and managing an information pool of digital GIS and design and construction data and making it available throughout the lifecycle of a project is commonly referred to as BIM. In the second part of this course, we will explore how BIM is being utilized today and learn the basics of one of the leading BIM compliant applications, Autodesk Revit Architecture 2010. During the third part of this course, students will be introduced to BPA, a process that embodies a holistic approach toward the integration of sustainability and design. By understanding when and how to apply sets of analytical exercises via applications like Ecotact Analysis within the context of Information Modeling, students will develop an understanding of how design decisions have profound and lasting impact on the overall building sustainability and performance. Credit 3 units.

A46 ARCH 436B BIM in Practice
BIM (Building Information Modeling) is a developing method of creating, sharing and managing project data through a visualized 3D or 4D model. While it continues to deliver on an initial promise to increase design consistency and efficiency while minimizing errors, the focus of attention is shifting to the use of BIM to facilitate integrated methods of project delivery. The course will explore the use of the BIM platform and the development of data exchange methods in architectural design through a case study and subsequent design project. Students will be provided instruction in Revit covering the creation, management, and extraction of data from a model, but will also look at the technology more broadly, discussing the changes advanced by the deployment of BIM processes in practice. Credit 3 units.

A46 ARCH 436D Advanced BIM in Practice
While the adoption of BIM continues to grow across the industry, criticism of its effectiveness as a design tool remains. The foundation of BIM, the creation and management of geometric objects with associated non-geometric data, is often at odds with established methodologies of design. Current practice typically manages this schism by separating design from the use of BIM for documentation and construction. The class will seek to develop methods of design within a BIM environment, not through the translation or reshaping of traditional techniques, but through the design of a methodology that seeks to capitalize on what BIM enables: direct, digital collaboration and the facile management of large data sets. This is not an introductory class. Basic knowledge in Revit (or an alternative BIM software) is required. Skill in other parametric and 3D modeling software as well as a basic knowledge of Grasshopper or other algorithmic processes is strongly preferred. Students will investigate and design digital processes using a short design brief to enable the investigation. Credit 3 units.

A46 ARCH 436E Technology + Tectonic
Beginning with a rigorous study of 3-dimensional grid systems, students will work in pairs to develop conceptual proposals for site-specific hanging installation. Students will examine materiality, grid distortions, and spatial qualities, as well as interactions with natural light and human input. The ideas generated in this course have the potential to directly affect an architectural installation the following semester. Students enrolling in the course should have completed at least one digital seminar as a prerequisite. Credit 3 units.

A46 ARCH 436F Designing with Grasshopper
The best way to learn how to design with Grasshopper is to use it. Each student will be guided through five different projects incorporating computational design logic throughout. The outputs of this course will be published on Instagram (@wustlhopper) and/or reddit (r/ generative). The course will build in complexity as it progresses through Grasshopper methods and plugins. At the end of the course, each student will have completed a 2D patterning project going from Rhino to Illustrator/Photoshop, another 2D patterning project
or Z Brush will be utilized for the initial digital investigations. Students will experiment with materials and develop innovative construction methods that engage digital fabrication tools such as the 3D printer, laser cutter, and CNC mill for the production of a second skin in the form of a garment for the human body. Credit 3 units. Arch: ETH, NS

A46 ARCH 438 Environmental Systems I
Environmental Systems I is the foundation course in the architectural technology sequence. This course addresses the relationship between buildings and an expanded idea of context, including ideas of environment, landform, energy, material and space. The class places an emphasis on each student developing his or her own attitude toward architectural sustainability, its role within the design process, and its relationship to architectural form. The class is organized around the themes of climate, site and energy. The theme of climate addresses macro- and micro-climates, and the roles they have in developing architectural form through ‘passive’ strategies. The theme of site expands the idea of the architectural project to examine landform, position, access and region. The theme of energy looks at architecture as both embodied energy and a consumer of energy, to understand how the architect helps to control and direct these flows at macro and micro levels. Two goals for the class are to provide students with ways of thinking about and of working with issues of sustainability, which can inform their design practice, and to equip them with the basic knowledge needed to continue within the technology sequence. Credit 3 units.

A46 ARCH 438 Environmental Systems I: Site Planning
Environmental Systems I, Site Planning module, addresses the relationship between buildings and an expanded idea of context, including environmental, material and spatial realms. The class places an emphasis on each student developing his or her own attitude toward architectural sustainability, its role within the design process, and its relationship to architectural form. The theme of site expands the idea of the architectural project to examine landform, position, foundation, access and region. Two goals for the class are, first, to provide you with ways of thinking about and of working with issues of sustainability, which can inform your design practice, and second to equip you with the basic knowledge needed to continue within the technology sequence. Only students who have received a partial waiver for A46 438 Environmental Systems I may register for this course. Credit 1 unit.

A46 ARCH 438C Expanding Skin
In the 1957 text ”The Pliable Plane: Textiles in Architecture,” Anni Albers wrote, “If we think of clothing as a secondary skin we might enlarge on this thought and realize that the enclosure of walls in a way is a third covering, that our habitation is another ‘habit’.” In this text, Albers proposed the concept of skin as an inhabitable layer, first as a covering for the body and then as an expanded layer of enclosure. This course will explore Albers’ concept of a second skin by developing new strategies for constructing complex surfaces at the scale of the human body, particularly in the context of digital fabrication and computational design. Emphasis will be placed on assemblies that yield innovative visual or tactile effects while also engaging specific material performance. How can we design with a focus on performative pattern that can enclose the body and its structural and geometric complexities? How can we conceive of patterns that are not disrupted by these complexities but rather enhanced by them? The course will consist of lectures, readings and seminar discussions, tutorials, iterative material investigations, 3D digital modeling, and digital fabrication. Student projects will focus on the design of inhabitable, layered constructions while engaging constructive techniques from both the fashion and architectural disciplines. Rhino (with Grasshopper), Maya or 2 Brush will be utilized for the initial digital investigations. Credit 3 units.

A46 ARCH 439 Environmental Systems II
We as architects have to analyze and address complex issues and relationships, synthesize them, and then make them manifest through clear design strategies. Building systems must reconcile solar heat gain, glare control, daylight levels, thermal insulation, ventilation, acoustics, air quality, structure and fabrication - all in relation to the scale and comfort of the human body. The development of environmental systems into a clear, comprehensive, and elegant design solution cannot be an afterthought; it must be a synthesized and integral part of the design process, with a clear strategy that operates at multiple scales. Building upon the passive strategies explored in Environmental Systems I, this course will lay the foundation for the integration of active environmental systems with enclosure, space, and the requirements for human occupation. This will be done through the study of climate, air, temperature, water, light, sound, and energy. Each topic will be assessed against problems, principles, possibilities and potential. This course focuses on how important it is to consider active systems as part of an integrated design strategy addressing both FORM and PERFORMANCE throughout the design process. Prerequisites: Environmental Systems I & Building Systems I Credit 3 units.

A46 ARCH 445 Building Systems
Building Systems will examine the performance and properties of building materials, both traditional and new, through an analysis of assemblies and related systems. Investigations of wood, masonry, steel and concrete and the integration of relevant building systems will provide the fundamental structure for the course. All systems will be investigated relative to their architectural purpose, impact on the environment, relationship to culture/context, technical principles and will also consider manufacturing, construction, our profession and the society in which we practice. Moreover, the course will also examine the performance characteristics of contemporary enclosure technology and explore the impact these technologies are having on design thinking. Although we will focus primarily on the aforementioned topics, we will also identify and consider the impact of other parameters on design and performance such as building codes, role of the profession, health and life safety, systems integration, sustainability and industry standards. The course strives to provide students with a sound familiarity and understanding of traditional building systems in wood, steel and concrete; as well as the skills necessary to represent these systems. The course also seeks to expose students to the material and poetic potential of these technologies related to the making of architectural environments. Credit 3 units.

A46 ARCH 447 Structures I
Statics and Strength of Materials through Beam and Column Theory. Loads are defined and states of stress are identified and analyzed. The context of structural behavior is identified and optimal structural behavior and material efficiency structural design is reviewed. Form-active, bulk-active and vector active structural options are explored relative to the transference of load along the length of structural members. The course applies structural theory to the analysis and design of structural members - beams, trusses, arches and columns. Credit 3 units.
A46 ARCH 448A Structures II
Continuation of Arch 447A with consideration of the effects of forces on structural members of various materials. Introduction to the design of structural members in steel, reinforced concrete and wood. Prerequisite: Arch 447A
Credit 3 units.

A46 ARCH 451J Aesthetic Subcultures: Identity, Values, and Architecture
Aesthetics is about belonging. Visual codes or “styles” express cultural identities and values, and they can be used to create a sense of exclusivity, separating those who “get it” from those who do not. For some subcultures—like punk and hip-hop—being difficult to decipher has served the goal of creating an identity in opposition to a complacent or oppressive mainstream. Some aesthetic movements—like avant-garde modernism and afrofuturism—have sought to offer visions of a better world and glimpses of how this world might be designed. This course asks: What are the aesthetic subcultures that drive architectural production today? Where did they come from? What are their motivations and how are these expressed? The underlying premise throughout the semester will be the idea that subcultures construct their own cultural spheres around shared experiences—for instance, an experience of violence that demands social justice or an environmental crisis that demands a different relationship with ecological systems. To decode the meanings and motivations behind any unique “style” of architecture, we need first to understand how it is situated within a historically-specific social, economic, and political system. In the modern western world, consumerism and the “fashion system” have been key. The first part of the course begins with the architectural consequences of the consumer revolution in 18th century England before exploring the mass production of cultural objects in the 19th century, visionary modernist movements, and the cultural fragmentation of postmodernism. The second part of the course focuses on contemporary aesthetic subcultures in architecture that have formed around new technologies, protest and justice movements, explorations of new forms of collectivity, and other phenomena. Case studies in architecture will be presented alongside key theoretical texts. Assignments will ask students to decode a selected aesthetic subculture through writing as well as speculative design.
Credit 3 units. Arch: GARW, HT, RW

A46 ARCH 453B Art and Architecture
From Ancient Greece to the Renaissance, architecture, painting, and sculpture were regarded as the principal fine arts. In later years, the visual arts were relegated to a separate sphere, independent from buildings and removed from the experiences of use; however, these positions are perennially contested. How do the distinctive positions of art and architecture in private and public spaces been articulated—and unmade and reworked—around imperatives such as education, economy, equity, or environment? When has the tension between art and architecture been a problem or a source of inspiration and origin of form? This seminar looks at selected models and the situations, ideologies, and concerns that attended or motivated them. Examples will be drawn from Ancient and Classical periods to the present.
Credit 3 units. Arch: GARW, HT

A46 ARCH 454B Civic Buildings and Perimeter Architecture in the St. Louis Park System: A Study on Fairground Park
This seminar is a design research course examining the Saint Louis park system’s complexity from an architectural and identity lens, primarily focused on built works inside the parks and their perimeter architecture. A comparative analysis will focus on Fairground Park at its center. This course provides an overview of the park’s social and political history, from the early 20th century to present-day planning. With more than 100 parks in the city, students will work through comparative analyses to study interior and perimeter architecture: civic buildings, housing, infrastructure, and memorials. The architectural and social narratives result in unique community identities and the persistent challenge of disinvestment in under-resourced neighborhoods. Because these parks are anchor points in the city, the course will also consider park-based connective routes to other primary urban hubs. This research project will enhance students’ understanding of the civic and social domain while they explore typology and case-study analysis techniques. In particular, students will investigate Fairground Park in North St. Louis as a central focus, including the perimeter bounding this 132-acre urban park. Fairground Park was founded in 1908 as a city park after it was previously sited as the St. Louis Agricultural and Mechanical Fairgrounds, where it hosted the St. Louis Exposition from 1856 to 1902. Attention shifted to Forest Park in 1904, when it became a focal point of the city as the location of the World’s Fair, with designs from the same landscape architect, George Kessler. Located near Fairground, College Hill, and O’Fallon, Fairground Park sits within predominantly black communities with high land vacancy percentages. The park itself was a historic racial conflict location, eventually leading to the desegregation of public pools following an injunction against St. Louis by George W. Draper II, an African-American lawyer and civil rights leader who filed suit in 1950. Fairground Park and its surrounding neighborhoods are locations of historical neglect and segregation. A comparative analysis will identify contributing factors of disinvestment to later engage in productive conversations about the park’s future.
Credit 3 units. Art: CPSC

A46 ARCH 455A Urban Books
Since the beginning of the 20th century, art, architecture, and urbanism together have investigated the production of images that shape the symbolic dimension of our experience of large cities. The main goal of this course is to critically embrace this tradition through the format of the artist’s book. St. Louis is the focus for our observations because it is familiar to our everyday lives and also because it provides key situations for understanding contemporary forms of urbanity and how urban space is produced and imagined. The course bridges
the curricular structures of art and architecture by enhancing the collaboration between the practical and scholarly work developed in both schools, with additional support from Special Collections at Olin Library. It combines the reading, lecture, and discussion format of a seminar with the skill building and creative exploration of a studio.

This course is divided into three progressive phases of development:

1. The first consists of weekly readings, discussion, and responses in the form of artist’s books. The second phase focuses on the Derive with physical activities and assignments based on interacting directly with the urban environment. The third phase focuses on individual research, documentation, and final book design and production.

Credit 1.5 units. Arch: SEM Art: CPSC

A46 ARCH 455D Community Design Sprints

In this course, students will provide scoping, phasing, programming, and conceptual design for small-scale yet pressing St. Louis needs through selected projects for community members and small organizations. Students will work directly with a local organization over 7 weeks in to clarify and move forward a community project; students will learn community engagement, facilitation, and communication skills, as well as practicing research, representation, and design skills. Open to upper-level undergraduate students and graduate students of all levels.

Credit 3 units. Arch: GAUI, UI Art: CPSC, FADM EN: H

A46 ARCH 456B Way Beyond Bigness...or Towards a Watershed Architecture

2015 marked the 10- and 20- year anniversaries of two seminal events that have challenged architects’ relationships to large scale, complex societal issues: 1) the publishing of the “S,M,L, XL” in October 1995 that featured Rem Koolhaas’ manifesto of “Bigness;” and, 2) the landfall of Hurricane Katrina just outside of New Orleans in August 2005 that catapulted fields of design into an unprecedented post-disaster context. Students will reconcile these two disciplinary jolts by understanding these seemingly incongruous snapshots of history: jumping off points for new modes for architectural activism and opportunism. Students will design a manifesto, in newspaper format, for a future-based discipline of architecture that sais uncharted realms that are “Way Beyond Bigness.” This will require the simultaneous submersion and assertion of architecture within other disciplines; the formulation of alternate modes of representations for emerging practice-based models; the blurring of academic and professional agendas in the urgency of activism; and, the integration of multiple scales, interest groups and agendas in ridiculously complex and antagonistic situations. Underpinning Bigness and Hurricane Katrina will be additional case studies, guest lectures and field trips that cover: CIAM and the emergence of urban design; Koolhaas’ thesis and OMA’s early practice; mega-scale urban renewal projects in St. Louis; contemporary investigations into territorial scales of design; and, multiple scales of contemporary, integrated Water-based designs, post-Katrina efforts and beyond. This course fulfills the History/Theory Case Studies elective requirement.

Credit 3 units. Arch: GACS, GARW, HT

A46 ARCH 457B Segregation by Design: A Historical Analysis of the Impact of Planning and Policy in St. Louis

This course aims to examine the causes and consequences of American Apartheid and racial residential segregation in metropolitan St. Louis and propose a report that suggests potential mitigation strategies for a given community. This transdisciplinary seminar, bridging humanities and architecture, introduces students to research, theories, and debates currently being conducted on issues of segregation, city planning, urban policy, and sustainability. By placing these debates in a historical and local context, students will discover how policy and decision-making are entrenched in racial, cultural, physical, and socio-economic segregation and engender the spatial transformation of America’s divided cities. Students will learn to evaluate and analyze policy and planning throughout the history of the neighborhood to ultimately understand the physical manifestation of segregation during growth and decline. Taking advantage of the academic resources in the region, the course offers a cross-university, cross-disciplinary environment to respond to the importance of this issue. Students will develop mitigation plans for selected communities in the St. Louis metropolitan region. The teams will be assisted by volunteer professional mentors from diverse fields and residents from the selected communities. The final product of the student teams will be a “book” that will be a compilation of the work of the students in detailing the history of the communities, causes, and consequences of segregation, as well as potential policy and design strategies.

Credit 3 units. Arch: CAST, GACS, SEM Art: CPSC EN: S

A46 ARCH 457C Radical Mapping

Maps are instruments of power. We have seen this, for example, in the racially-motivated ‘redlined’ maps that legitimized urban clearance of entire neighborhoods in American cities in the 1930s. But maps are also instruments of resistance, for visualizing lived experiences and critiquing political systems and relationships of power. Maps are tools for re-writing dominant narratives and spatializing truths. Maps stage new design possibilities. This class will introduce students to the agency and potential of maps and mapping, a skillset all designers need in the face of our current moment of social and environmental justice collapse—a moment that has long been occurring. The course will cover interdisciplinary theories of mapping; critical cartography; American sub/urbanism; issues of race and place; and techniques of visualization. Students will build a radical atlas of spatial politics centered on selected themes, focused on a common American first ring suburban site—either Ferguson, MO, or Kenosha, WI or similar. There are no formal pre-requisites for the class, but knowledge of Adobe Illustrator and In Design are a must. Students will initially work with GIS ArcMap/ArcPro, a geospatial software-provided free, alongside an introductory tutorial and troubleshooting session/s with the WashU Geospatial Library analysts.

Credit 3 units. Arch: ETH, S, GAMUD, GAUI, SEM, UI Art: CPSC

A46 ARCH 457K Towards Common Ground

Given that free market interests and extraction dominate contemporary urbanization, this class will explore socio-spatial configurations towards commoning that are surfacing within today’s urban reality. With this in mind, you are invited to explore opportunities towards a common ground via the creation of a game. The debate on urban commons and commoning has grown exponentially in the twenty-first century. We are confronted with a significant amount of literature on commons, commoning, and the common, while the contemporary urban world is dominated by socio-economic disparities, privatization, inadequate resource distribution, and excessive resource extraction. As these forces and challenges unfold, the urge of urban inhabitants to collectively come together is on the rise. We generally see commoning as a base for collaboration and solidarity. Commoning, however, is a complex process as it relates to sharing knowledge and resources, and with regard to conflict and power struggles. Commoning in this context is an act of collective self-regulation and of self-awareness, as the sharing of resources, knowledge, and power create constantly changing rules for commoning and Commoners alike. As the philosopher Jacques Rancière reminds us, flourishing processes of commoning need both narrators and translators. Together, they enable commoning; they help facilitate the connection between people to enable new spatial configurations and stories to unfold. This course organized through two main principal agendas that are intertwined with one another - (re)search analysis and the development of a game revolving around the idea of commoning. The final product of this course will conclude with a play/presentation of the game you develop.

Credit 3 units. Arch: GAUI, SEM, UI
A46 ARCH 459A Under the Scramble Suit
Materiality points to the whirling complexity and entanglement of diverse factors in the digital (and post-digital) age, in which material, which like sound or language can now also be something that is not physical, is an effect of an ongoing performance. By surveying the pseudo-archeology of the term “materiality,” from the “specificity” discussions to “post-medium” conditions, we investigate a “material and environmental turn” in the media studies and visual culture. We explore the way media mediate materials and a possibility for the media to be understood as environments in an age where the collapse of realism is already widespread through the visual discourse. Credit 3 units.

A46 ARCH 461D Laboratory for Suburbia
During the past five years, America’s suburbanized landscape has emerged as a site of urgent electoral, cultural, and spatial contestation; it is arguably the defining geography of the national political moment. The fields of design and art, however, have largely failed to engage this critical space, remaining focused instead on prestigious cosmopolitan destinations and distressed inner-city communities. This interdisciplinary course will ask students to step into this gap, exploring and proposing new forms of critical suburban practice. This course is interdisciplinary, and students with interests in visual art, architecture, urban design, art history, public art, planning, performance, urban history, American Studies, and anthropology are especially encouraged to enroll. For the course’s final project, students will draw from research and fieldwork to produce propositions for interventionist art or design projects in St. Louis. Final projects can include “paper architecture” renderings, sculptural maquettes, video works, performances, curatorial projects, or scholarly papers that point toward new models for critical and visionary suburban practice. Credit 3 units. Arch: GAMUD, GAUUI, UI

A46 ARCH 462F Wellness in Buildings
The WELL Building Certification Standard is a tool to enhance human health and well-being in buildings. This course investigates the relationship between the built environment and human health to promote well-being through design strategies and operational protocols based on a designated occupational therapy clinic office in St. Louis. Students will investigate design concepts and new technology supported by analytical modeling. This emphasis on the suitability of both for the future of sustainable architectural design practice and the virtual building with its physical characteristics (materials, assemblies, passive design strategies, heat transfer, daylighting, embedded energy), we will attempt to confirm and testable principles and how the knowledge at the schematic level of project development. The model analyzed by each team will provide sufficient comparative information for a design approach whose desired goal is carbon neutrality in the lifecycle of the building. Students will be encouraged to investigate the suitability of analytical modeling software, in the context of critical design methodology. Prerequisites for this course are a basic understanding of BIM methodology and insight into sustainable design practices. Fulfills Digital elective requirement. Credit 3 units.

A46 ARCH 462I Design Strategies for Energy Efficiency
High-performance, zero-energy buildings are an integral part of addressing climate change, pollution, social inequality, and other urgent contemporary issues due to the outsized impact the built environment has on global energy use. The course will allow students an opportunity to learn the technical skills required to design highly efficient buildings using energy modeling and simulations. The energy impact of the building’s orientation, thermal envelope, fenestration, shading, air sealing, thermal bridging, thermal mass, ground contact, natural ventilation, and mechanical systems will be examined. Emphasis will be placed on cost, performance, sustainability, renewable energy, and the professional designer’s role in efficient buildings. The course concludes with each student completing a cumulative project which encompasses a whole building approach to energy efficient design. Each of these projects will be specific to the individual student and focused on the energy efficiency design principles which relate to the type of building, occupancy, climate, and design aesthetics of the project. Students will need to exhibit mastery of the concepts and techniques used throughout the semester in order to synthesize the existing constraints with energy efficiency, sustainability, and design excellence. Prerequisite: Students must have either completed or waived A46 438 Environmental Systems I in order to register for this course. Students who have waived Environmental Systems I with the exception of Site Planning are eligible to register. Credit 3 units.

A46 ARCH 462M Pattern Recognition
Interrogates a recent history of architecture replete with pattern. Case studies of patterning in contemporary projects will be undertaken through the production of analytical, computational models to reveal an underlying logic of performance and construction. In parallel, the course will present a theoretical survey of related issues in art, psychology, computation, and ecology. In this context, pattern will be understood as a performative expression of an ecological system, distinct from historical issues of ornament and representations. Informed by the analysis, students will then digitally produce an original pattern, both graphically operative and spatially materialized. Credit 3 units.

A46 ARCH 462N Constructing Ideas
Constructing Ideas is about creating design concepts and transforming these into built architecture. We will learn how conscious imagination and coherent interventions lead us to ideal realities. This class examines the design and construction process as academic research. We consider the practice of making architecture as a synthesis of analysis, interpretation and transformation. Studies will teach us how conscious imagination and coherent interventions lead us to ideal realities. This class examines the design and construction process as academic research. We consider the practice of making architecture as a synthesis of analysis, interpretation and transformation. Studies will teach us how conscious imagination and coherent interventions lead us to ideal realities. This course will focus on the principles of sustainable design as examined through Building Performance Analysis (BPA) and applied Building Information Modeling (BIM) methodology. The foundation for this course will be an introduction to BIM and BPA and the significance of both for the future of sustainable architectural design practice supported by analytical modeling. This emphasis on the suitability of building modeling for analytical purposes and on the interpretation of such data will provide the basic knowledge necessary for the second phase of this course, in which students will use a previous or current studio project for an in-depth study of their building’s performance in the context of its chosen site. Exploring the interaction between the simulated environment (climate, isolation) and the virtual building with its physical characteristics (materials, assemblies, passive design
We will consider invisible structures and material specificity. Learning this language gives us the ability to transform our ideas into specific architectural expressions and precisely tailored solutions. The form of the seminar is experimental. We consider our meetings to be spatial and contextual interventions, precisely designed like architecture. Sessions will vary, from a lecture to an exhibition, talks, a dinner—the goal is to be very conscious about what we are doing. This process is going to be documented throughout the whole semester. Each student will create his own design thesis and realize an installation that reflects it. The results will be exhibited and presented to the public.

Credit 3 units.

A46 ARCH 463B Emergent Urbanisms
This course surveys emergent models of urbanization in globalizing cities that thus far defy categorization or exist peripherally in studies of urban form. The goal of the course is to equip students with the theoretical and historical background, the analytical tactics, and the critical awareness necessary to reposition themselves as designers in these increasingly challenging contexts. Through case study examples and supporting readings, the course will decipher the formal, social, and environmental effects of particular processes defining new urban spatial configurations in city-regions around the globe. Most of these processes are driven by discourses of ‘efficiency,’ such that urban forms are increasingly inflected by economic operating systems, as they are subsequently detached from traditional concerns of livability and public interest. Emerging urban assemblages include: massive manufacturing warehouse landscapes or logistical distribution centers and ‘aerotropolis’ transit hubs as well as those spaces left behind by regional restructuring: de-urbanizing (or deliberately erased) environments which contradictorily enable growth’ in other areas (or over the same areas); and the informal settlements that emerge more spontaneously on the margins of mainstream urban policy. Students will use their understanding of these spatial and logistical configurations to project creative models for re-direction or engagement. Sources and analytical tactics will be drawn from across fields including design, sociology, geography and history. Fulfills Urban Issues elective requirement, MUD-Track elective requirement.

Same as A49 MUD 463B
Credit 3 units.

A46 ARCH 463C Invisible Cities
This graduate and advanced undergraduate seminar takes as a point of departure the famous 1972 Italo Calvino text that reframes a single city (Venice) as multiple cities, told through a sequence of discrete narratives and descriptions. Each of Calvino’s Invisible ‘cities’ reflect different emotional and physical environments and possibilities—or impossibilities—for their inhabitants, yet are all still connected through an overarching narrative. Invisible ‘Cities’, the course, builds on this premise that a city is not a one-size-fits-all experience (nor a monolithic construct with a uniform constituency), but instead is comprised of radically different environments all selectively accessed, depending on one’s positionality or relationship to urban redevelopment processes. In places like St. Louis—but in fact in all American cities—residents live out different urban realities or imaginaries, with unequal access to the same services, provisions and processes. A highly visible instance of this occurs along Delmar Blvd in St. Louis where two contrasting lived experiences play out in neighborhoods across from each other on the north-south divide. However, this class positions that much less visible instances of the duplicitous city also exist, in spaces not geographically divided, but (more insidiously) overlaid. The course will focus on this intersection of form and content where both privileged and underserved populations co-exist in much more intertwined ways. Within any given block, neighbors live according to different opportunities, for education, health access, police services, or routes to property acquisition and financing. These are the invisible, spatially simultaneous cities; the urban realities that are much harder to see—at least to those who do not live those realities on a day-to-day basis. Like in Calvino’s world, urban and lived space is endlessly continuous and accessible for some; for others it is fragmented, even disorienting or opaque. This course will examine, frame, collect and document the various manifestations of invisibility together with the political instruments and policies that produce and reproduce it. We will use the St. Louis region as our primary focus, with comparisons to other sites. Our studies will involve a close re/reading of many of the mechanisms of daily governance and urban design such as policies, planning tools, legal, financial and real estate protocols and of course design decisions and processes; ie the apparatuses of urban redevelopment that exist right before our eyes. The seminar welcomes both graduate students and advanced undergraduate students from across disciplines. Support for Invisible ‘Cities’ is provided by the Washington University in St. Louis Ferguson Academic Seed Grant Program granted through the Offices of the Chancellor and Provost and the Olin Business School. Fulfills Urban Issues and MUD Track elective requirement.

Credit 3 units. Arch: GAMUD, GAUI, UI

A46 ARCH 463D City Life and Urban Worlds: An Introduction to the Urban Humanities
The urban humanities is an inter-/anti-disciplinary project that brings together theory, practice, and methods from fields in architecture, urban design, and the humanities to interrogate the urban condition. In this core course, we will delve into key theorists, texts, and methods that inform the urban humanities through seminars, site visits, and design projects. We will debate emerging perspectives in critical urban theory and then explore the applicability of these positions in St. Louis through mapping, street ethnography, and subtraction. In addition, this seminar is designed to introduce urban scholars from across the humanities and design fields to each other. Participants will be encouraged to experiment, travel, and engage in dialogue across their fields. What, we will ask, is the status of the urban commons in an era of enclosures and privatization? What can postapocalyptic cyberpunk from Lagos teach us about “smart cities”? How do built environments get their politics? Can these politics be redirected or subverted?
Same as A49 MUD 463D
Credit 3 units. Arch: GAMUD, GAUI, UI Art: CPSC

A46 ARCH 464A Architecture and Photography
Seminar that deals with issues raised by use of photography by architects, historians, and critics. Seminar will confront the assumption that our knowledge of notable buildings and architectural space is based primarily on the photographic image. Photographs are tacitly accepted as objective facts, and the pervasiveness of photography in magazines, books, and exhibits as substitute for direct experiences are rarely questioned. Goal of seminar: to foster a healthy skepticism of photographs, and to investigate the role of photography as a means of record and convey complex spatial conditions by the ordering conventions of the frame. While not technical, the course will introduce students to technical aspects of photography that are particularly relevant to architectural photography: parallax, lighting, lens distortion, depth of field, format and grain, cropping, photomontage, and point of view. Fulfills History/Theory requirement.

Credit 3 units.

A46 ARCH 465C Art, Design, and Entrepreneurship: Creative Placemaking Beyond The City
This course invites students from diverse areas of interest to engage with the cultural landscape of Marion County and Hannibal, Missouri—a region that, through the work of Mark Twain, popularly epitomizes both rural life and the allure of the Mississippi River. While a quarter of a million tourists visit this area each year to follow in Tom Sawyer’s footsteps, the work of local artists, designers, and entrepreneurs are innovating the narrative of this place and opening up room for consideration of African-American experience, local food systems, and the complex series of social and economic connections within
life along the Mississippi. This course puts that spirit of collaboration and imagination in the hands of students, challenging them to think beyond the borders of their discipline to create projects that present new connections between place, community, and culture to both rural and urban audiences. The National Endowment for the Arts defines creative placemaking as an opportunity when “public, private, not-for-profit, and community sectors partner to strategically shape the physical and social character of a neighborhood, town, tribe, city, or region around arts and cultural activities.” Through fieldwork, research, and idea-creation, students will collaborate with mentors on the ground to create locally appropriate projects that address questions of culture and design in the region. Occasional off-campus visits will be joined in the classroom to a wide range of readings, case studies and webstreamed conversations with national leaders across fields. The course will conclude with small teams designing a specific plan, event, or project that could later be implemented in the community.
Credit 3 units.

A46 ARCH 465P DeCon & ReCon: Design A Pavilion to Demonstrate Circular Economy in Architectural Design
A genuinely circular architectural design requires the Reuse of the salvaged materials from Deconstructed buildings (DeCon) at their highest quality in new Construction (ReCon). Team WashU will explore the opportunity to design and build a unique pavilion, about 50-200 square feet, at Forest Park or the Botanical Garden based on a fully circular economy concept using various harvested materials in St. Louis. The pavilion will present innovative architectural solutions for salvaged building materials, demonstrate their possibilities, and give the material a new life in the new structure. The pavilion will be wooden, light-gaged steel, or a combination skeleton strapped with steel connectors. The students will investigate a new approach to easily reversible component connections in the pavilion without needing nails or glue. In this way, Team WashU will tackle global challenges, such as climate change, linked to the meaningful social justice transition.
Credit 3 units.

A46 ARCH 467A Disappearing Act
What does erasure make, and how might we reconstitute what has been lost? This seminar will explore the architecture of ghosts: things thought to be lost or destroyed, or which can no longer be accessed. This representation-forward class will test a range of drawing and making techniques in various media and scale to foster a dialog about what drawing misses and the presences and absences of the built environment. We will frame our work and ideas in architectural discourses of subtraction, palimpsest, and productive removal. Our work will capture the dynamism and logic of the built environment.
Credit 3 units.

A46 ARCH 470G Edges of Privacy
In collective housing, interactions between neighbors occur in often tight spaces of shared access. In hallways, walkways, stairs, and landings, proximity to the private spaces of the dwelling is extreme. Many architects have been experimenting with open-walkway access type in collective housing beyond an economical means of circulation. Buildings that use open-walkways-which in colder climates can be glazed-often provide energy savings, as they allow for the cross-ventilation of units and can serve as climatic buffers and passive heat sources. Additionally, these spaces offer potential scenarios of both conviviality and conflict, a contrasting condition to be reconciled through design to create housing for diverse groups of people. In this seminar, students will explore selected historic and contemporary housing examples with open access walkways-both successes and failures-in Europe and Latin America. Through lectures, research, analysis, discussions, and rigorous reordering of selected buildings, students will examine organizationally, spatially, and socially-the modes of interaction afforded by design and the potential for this access type. The seminar is part of the ongoing research project "Edges of Privacy. Open Access Walkways in Collective Housing" and the work may result in a publication and exhibition. It is open to undergraduate juniors and seniors and graduate students who have completed the core sequence.
Credit 3 units.

A46 ARCH 471A Continuity and Transformation
Throughout history and across cultures, certain ideas, concepts and organizational strategies have persisted in architecture, despite advances in social ideals and technological capabilities. The seminar explores the phenomenon of this continuity with the goal of uncovering the manner in which these ideas and strategies are transformed. Whether classified by use, characteristic form, or compositional device, the continuity of these notions is clearly traceable as a body of knowledge waiting to be revealed, understood, assessed and, when valid, built upon. The transformation of ideas and strategies is one of the most fundamental activities of the designer, but relies on careful study. We will discover evidence of this phenomenon in vernacular architecture, patterns of settlement and habitation, and in the work on many of our most influential practitioners, such as Le Corbusier, Kahn, Moneo, and Zumthor, as well as in the realm of painting and sculpture including Cubism, Suprematism, and Expressionism.
Credit 3 units.

A46 ARCH 472 Sustainable Development
This seminar is an introduction to the basics of small- to medium-scale development. It will begin with a series of introductory lectures covering the principles and tools of development, such as creating a project performance, basic tax credits, TIFs, and financial structuring of a project; exploring methods of implementing sustainable practices and designs into development-driven projects through marketability, cost-savings, tax credits and other incentives; and investigating the processes of real estate development through the use of sustainable ideas and practices in buildings. It will continue with a series of case studies in which the class will examine models of existing developers in terms of these base elements. Finally, students will be asked to develop a project in order to understand the architect-client relationship and how to stimulate recognition of the value and importance of sustainable designs in real estate development.
Credit 3 units.

A46 ARCH 475E History of the Modern Art Museum
This seminar explores the development of the modern art museum as an architectural type, measured against evolving nature of display objects, curatorial practices, and demands of the viewing public. Since the consolidation of the type in the early 19th century, the art museum has been the primary site where the symbiotic trajectories between artistic and architectural development have played out. Also, to be examined is the importation of this program into non-Western countries, which responded with their own canons and classifications of fine art. The course ends with recent case studies where architecture has made new, often aggressive, commentaries on objects it is designed to display. The course is open to graduate students and advanced undergraduate Architectural History minors. Fulfills History/Theory elective requirement.
Credit 3 units. Arch: GARW, HT

A46 ARCH 478B Modern Architecture in St. Louis, 1930s-1970s
This seminar will examine postwar modern art and architecture in St. Louis within the changing design and social contexts of the postwar era, which included massive spatial and racial transformations. Using artworks, photographs, films, and architectural drawings and models, this course will bring together design and social documentation to understand this remarkable creative and conflicted period in St. Louis’s
history. Michael Willis, FAIA, will also give several lectures and lead two tours. Students will present selected readings and pursue individual research projects for this course. Prerequisite: A46 4284 or equivalent course taken elsewhere.

Credit 3 units. Arch: GARW, HT, RW Art: CPSC

**A46 ARCH 486A NOMA National Design Competition**
The 2024 Barbara G. Laurie NOMA Student Design Competition Seminar will allow students to work collaboratively on a national design challenge that will be located in Baltimore, Maryland. The students will have an opportunity to visit the site to gather physical geographic, neighborhood context, and demographic data. They will also work together in developing presentation boards, a physical site model and other related digital graphics. The seminar is open to both undergraduate and graduate students. The course will begin on August 5, 2024 and end on October 28, 2024. The course will begin remotely and transition to in-person learning when the fall semester begins. Credit 3 units. Art: CPSC

**A46 ARCH 490A Explore & Contribute: Collaboration between Washington University & Henry Elementary School**
A major goal is to have elementary school students explore sustainable ways to live during the 21st century. To this end, we will offer students curriculum ideas which will emphasize ecological sustainability, environmental health, personal responsibility, leadership, and a high-quality academic program. We will place emphasis on the environmental sciences, energy alternatives and conservation, recycling, organic gardening and the food sciences, and the emerging "green" economy. We will work to help the students improve their math, science, writing, and hands-on skills - using the range of topics about sustainable living as the "vehicle." This course invites both undergraduate and graduate students from different fields of study to apply their discipline to the goal of designing and teaching hands-on problem-solving projects for elementary students. Gay Lorberbaum, with advising from administrators at the elementary school, will work individually with each WU student and each WU team to develop the right fit between the creative contribution each WU student will offer and the range of emotional and intellectual needs of the elementary school students. WU students enrolled in this course will work on-site at the elementary school during the scheduled weekly meeting times. Credit 3 units. Art: CPSC

**A46 ARCH 4930 Invisible St. Louis: People, Place, and Power in the Divided City**
This course approaches the study of segregation and inequality in St. Louis as deeply relational and contextual – that is, embedded in a particular space and place and constituted through social, political relations. Students will be immersed in the history, theory and contemporary academic debates surrounding inequality, segregation, and social justice initiatives in urban cities across the United States. The course pairs this theoretical base (conceiving of segregation as a multifaceted and durable, historical, spatial, and interpersonal) with intensive research experiences drawing on the methodological tools available across sociology, urban design, and architecture (archival research, data collection, mapping, diagramming, interviewing, field observation). Students will initiate collaborative research projects aligning with the needs of local organizations that serve the city’s historically disadvantaged populations. Local guest speakers (scholars, community leaders, residents) will enhance students’ classroom learning, as will site visits and other discussion formats. This interdisciplinary course bridges the Department of Sociology and the Sam Fox School of Design and Visual Arts, a collaboration supported by The Divided City initiative. Same as ISO INTER D 4930 Credit 3 units. A&S IQ: SSC, SC BU: BA EN: S

**A46 ARCH 499 Senior Capstone in Architecture**
The Senior Capstone in Architecture allows undergraduate students in their final semester of study to pursue individual research projects. All students will participate in shared discussions and presentations, as well as pursue a highly individualized line of research inquiry that potentially starts where a former project left off, supplementing current or previous coursework, or investigating a previously unexplored route. The course will culminate in a presentation and defense of a well-articulated and developed research project. Credit 3 units.

**Landscape Architecture**
Visit online course listings to view semester offerings for A48 LAND.

**A48 LAND 304 Shared Ecologies and Design**
This interdisciplinary course will introduce biological, social and cultural ecology concepts to proactively address current stressors that impact and are being impacted by design and the built environment. These effects and affects range from (but are not limited to) climate change science; racial and social justice impacts; sustainability, resiliency and adaptation-design strategies; systems-based and multi-scalar understandings; and inter relational human and non-human environments bound in both acting and being acted upon locally and globally. Credit 3 units. Arch: ECOL

**A48 LAND 315B Historic Preservation, Memory and Community**
Whose history is significant enough to be worth preserving in physical form? Who gets to decide, and how? Does the choice to preserve buildings, landscapes and places belong to government, experts or ordinary people? How does the condition of the built environment impact community identity, structure and success? This place-based course in historic preservation pursues these questions in St. Louis’ historically Black neighborhood The Ville, where deep historic significance meets a built environment conditioned by population loss, disinvestment and demolition. The course explores the practice of historic preservation as something far from neutral but rather considers it as a creative, productive endeavor that mediates between community values, official policies and expert assertion. Critical readings in preservation and public history will accompany case studies, community engagement and practical understanding. Credit 3 units. Arch: GAUI, UI

**A48 LAND 401 Landscape Architecture Design Studio I**
This core studio explores design principles common to architecture and landscape architecture as well as their own specificity. A series of problems will focus on the relation of component to space through conceptual, analytical, formal, and perceptual investigations. Credit 6 units.

**A48 LAND 402 Landscape Architecture Design Studio II**
In this core studio, students will develop a spatial understanding of landscape architecture through a series of exercises of varying scale and complexity. Building design skills incrementally, students will acquire facility with the manipulation of ground plane and the elaboration of vegetation and material strategies at both site and urban scales. The studio will foster an appreciation of landscape architecture as a systemic construct with formal, ecological and social implications. Credit 6 units.
where the image and the video dominate our scrolling - it's more culture of immediacy that we currently find ourselves in - an era to convince others of our designs, positions, and intentions. In the universally. Furthermore, we use drawing as an act of persuasion - ideas and information in a way that could arguably be understood to synthesis digital and analogue time-based media tools (sound and technology. Learn to scientifically use drones. Learn to scientifically use a movie. Climate-themed movies. Post-apocalyptic movies. Meet in day fieldwork with Geology Assistant Professor Alex Bradley. Map and produce digital representations at 2-cm resolution of a mountainside reclamation, and restoration. urban revitalization, various design typologies, sustainable land use, and urbanization, the course will center design disciplines but also hedgerow, etc., and their origins in productive landscapes, application and design such as bosque, grove, glade, allee, meadow, wetlands, and contemporary fire landscapes. students will experimentally develop projects that traverse diverse critical frameworks for understanding, shaping, inhabiting, and tending contemporary fire landscapes. Credit 3 units.

A48 LAND 430E Special Topics: Solar Decathlon Landscape Strategy
A solar decathlon house is currently being designed and constructed by Sam Fox architecture students for entry into the 2017 competition to be held in Denver, Colorado. This summer landscape architecture studio will develop the design and construction drawings for the high-performance landscape system that sustains the house. It will provide energy, light, water and food. Credit 3 units.

A48 LAND 453 Advanced Planting Design
This course focuses on both the cultural, environmental, scientific and the technical aspects of planting design. The course will be taught in 3 modular sessions: Horticulture and the Science of plants; Typologies and design such as bosque, grove, glade, allee, meadow, wetlands, hedgerow, etc., and their origins in productive landscapes, application to contemporary landscape architecture; and the Practical hands-on experience in the field with both design documentation to installation techniques. The course will offer several field trips to experience urban revitalization, various design typologies, sustainable land use, reclamation, and restoration.
A48 LAND 480B Mapping the Metropolitan Mississippi
This seminar explores the relationship of city to river through reading, recording, and mapping. Students will document their research, create proposals, and develop simulations and/or prototypes for a site on the St. Louis riverfront. Methods of inquiry will combine hand-recording, photography, GIS techniques and DIY devices. The course will alternate discussion sessions, field research, and lab. Open to all graduate students; undergraduates require the instructor’s approval. Credit 3 units.

A48 LAND 483A Emergence in Landscape Architecture
This course investigates the roles of emergence theory in landscape architectural discourse. For the purposes of the course, emergence is considered as the development of new and/or different conditions as a result of disturbance. Disturbance can take many forms, and the phenomena that are subject to disturbance are many and varied. Landscapes are continually disturbed by social, economic, and physical irruptions, but cognitive structures, perceptual frameworks and cultural values are also subject to turbulence that, as with landscape disturbance, often leads to innovation, novelty and resilience. The course will explain what emergence theory is, where it comes from, how it relates to environmental design in general, and how it has - or could - change the way we design human and nonhuman inhabitations. Through readings, presentations and discussions, students will be able to connect the rise of emergence theory in cultures of contemporary thought to its application in practice. The main theme of the course is the potential for emergence theory to enable us to relate qualitatively different modes of existence (human; nonhuman) to each other and through the connections thus established improve the lifeworlds of all. The structure of the course is based around ten key concepts of emergence, as follows: open systems, situation, initial conditions, assemblage, nature cultures, difference, field theories, disturbance, morphogenesis, formless. Each student will investigate one of these concepts and present their findings to the class. Credit 3 units. Arch: ECOL