**Elective Courses in Department of Architectural Technology**

*Courses are not given every semester*

**ARCH 3550**

**Building Performance Workshop**

3 cl hrs,3 cr

Review of the fundamentals of sustainability in architecture.  The course fosters the students’ understanding of climate change resulting from current waste, water, and energy practices, and introduces them to innovative building materials, systems and technologies to mitigate this change. The course introduces the criteria and the technological tools by which green buildings are measured, assessed, and funded.

Prerequisites: (ARCH 1250 and ARCH 2370) or (CMCE 1222 and CMCE 2320)

**ARCH 3551**

**Sustainability: History and Practice**

3 cl hrs, 0 lab hrs, 3 cr

Sustainability describes an approach to the design, construction and stewardship of products and environments that align human need and ecological resourcefulness. This course focuses on built work of the last 200 years that grew from a new consciousness of ecological limits, living system dynamics and understanding of human well-being. The practice of sustainability has developed numerous and sometimes competing logics. This course explores how sustainable criteria are influenced by outlook (and self-interest) and how the prioritization of health, social agendas, economics, aesthetics, environmental protection or resource efficiency have shaped selected buildings, landscapes and city plans.

Prerequisites:  ENG 1101, completion of 45 credits

**ARCH 3570**

**Lighting and Acoustics in Architecture**

3 cl hrs, 0 lab hrs, 3 cr

A general study and survey of the roles that lighting and acoustics play in the design of buildings. Areas of study include day lighting and artificial lighting of spaces, and sound transfer and control in interior and exterior spaces. Lighting system components, design, application and equipment are examined along with the design of spaces to provide desirable room acoustics. The application of computer software for lighting and acoustical investigation and design of spaces is also examined. The second and final course offered in Architectural Environmental Systems sequence.

Prerequisites:ARCH 2370, ARCH 2430

**ARCH 3590**

**Parametric Computation, Materials and Fabrication**

1 cl hr, 4 lab hrs,3 cr

An introduction to digital fabrication. In the context of computational design and digital fabrication thinking and techniques, the course will explore the qualities of materials such as wood, concrete, and plastics. Projects will provide students with experience in the use of a variety of tools, equipment, key concepts, and emerging digitally-driven technologies, including parametric rule-based design, subtractive fabrication, assembly techniques, and iterative design processes.

Prerequisite: ARCH 1191 and ARCH 1291, both with a grade of C or higher

**ARCH 3591
Computer-Assisted Architectural Animation**

2 cl hrs, 2 lab hrs, 3 cr

This elective course is an introduction to the use of the computer to assist in the production of 2D architectural animations, composite renderings, 3D animated models, time-lapse studies and other architectural design tools. This course involves the use of the computer, methods of architectural rendering and animation, and the drawing and storage of computer animations with different devices.

Prerequisite: ARCH 1291

**ARCH 3609
Integrated Software in the Architectural Office**

3 cl hrs, 3 cr

The course is designed to introduce the student to the variety of software that is being used in a design firm. The student will be provided with the guidelines for a better understanding of the integration of specialized software into all aspects of the architectural profession. The course focuses on managing a computerized office and understanding and using the latest technologies in a design firm.

Prerequisite: ARCH 1291

**ARCH 3631**

**Advanced Materials Workshop**

3 cl hrs, 0 lab hrs, 3 cr

Building design and construction must anticipate an influx of smart materials which respond more acutely to environmental conditions and limitations. This course synthesizes research in materials science with the latest technologies for tooling and measuring performance within the built environment. Materials to be researched and developed may include glass, ceramics, plastics and polymers, natural fibers and metal alloys. Students research materials with a particular focus on selection, sourcing, processing and assemblage.

Prerequisite: ARCH 1291; Pre- or co-requisite**:** ARCH 2430

**ARCH 3640**

**Historic Preservation Theory and Practice**

3 cl hrs, 0 lab hrs, 3 cr

A broad introduction to the history, theory, and practice of historic preservation. This course encourages understanding and critical thought about the principles and assumptions underlying the practice of historic preservation, including preservation law, preservation planning, adaptive use, design issues, and public history. This course, in combination with ARCH 3522 History of NYC Architecture and ARCH 4740 Construction Technology for Existing Buildings, comprises a concentration in Historic Preservation, which positions students for successful entry into preservation-oriented architectural and consulting firms, and related fields.

Prerequisite: ENG 1101

**ARCH 3662 Government Regulations and Approvals**

3 cl hrs, 3 cr

This course familiarizes the student with the scope of the municipal agencies involved in approving the construction of a building in New York City. The class explores the process between the architect and these agencies in order to produce new and renovated buildings in a complex urban milieu.

Prerequisite: ARCH 2330 with a grade of C or higher

**ARCH 3690**

**Intermediate Computation and Fabrication**

1 cl hr, 4 lab/studio hrs, 3 cr

Focus on parametric tools and digital prototyping techniques and practice. The course fosters a comprehensive understanding of exemplary construction and tectonic systems, as well as allowing students to develop a proficiency in applying this knowledge in constructing associative/parametric digital models that utilize tools to generate alternative variations of these systems.

Prerequisite: ARCH3590

**ARCH 3691**

**Advanced Design and Building Information Modeling**

1 cl hr, 4 lab/studio hrs, 3 cr

This course focuses on the full development of an integrated design solution that leverages Computer Aided Design, 3d Modeling and Building Information Modeling tools. Student projects demonstrate a mature understanding of materials and their assembly and the structural and mechanical systems of a well-coordinated design.

Prerequisites**:** (ARCH1291, ARCH 2430); or AAS degree in Architecture or equivalent; **Co-requisites**: ARCH 3510 or ARCH 3610 or ARCH 3630 or ARCH 4710 or ARCH 4810 or ARCH 4830

**ARCH 3900**

**Architecture Study Abroad**

3 cl hrs, 0 lab hrs, 3 cr

Students gain an understanding of the architecture and urbanism of foreign cultures, through an intensive program of drawing, analysis, and historical studies. This program will be offered overseas.

Prerequisite: ARCH 3510 with a grade C or higher, or an AAS degree in Architecture or equivalent

**ARCH 4709
Advanced 3D Modeling and Rendering**

3 cl hrs, 3 cr

This elective course focuses on 3-dimensional modeling, rendering, lighting and animation techniques. Most advanced aspects of the rendering software will be explored through a series of exercises designed to acquaint the student with the various commands found within the program used.

Prerequisites: ARCH 3591 with a grade of C or higher

**ARCH 4780**

**Case Studies in Structural Engineering**

1 cl hr, 4 lab/studio hrs, 3 cr

The presentation and discussion of several case studies taken from real life. The course focuses on engineering principles required to assure the proper performance of actual structures in practice. Various case studies involving a spectrum of structural problems are presented and discussed. Emphasis placed on lessons learned from structural failures and what steps should be taken to avoid them. Students are encouraged to participate in the discussion and in the formulating of solutions to the problems. The theoretical principles governing the case studies are discussed.

Prerequisites:ARCH 2480**,** AAS degree in Architecture or equivalent, or AAS degree in Civil Engineering Technology or Construction Management or equivalent

**ARCH 4791**

**Advanced Building Information Modeling and Integrated Project delivery**

1 cl hr, 4 lab/studio hrs, 3 cr

Building on BIM knowledge learned in previous courses students develop an understanding of BIM and Integrated Project Delivery through the research and presentation of case studies of existing projects and field trip(s) to current projects at different stages of the process from design to manufacture to implementation. They design and execute the development of a project component or building system using BIM software and fabrication equipment.

Prerequisites**:** ARCH 3691, AAS degree in Architecture or equivalent

**ARCH 4810**

**Architectural Design VIII: Special Topics**

2 cl hrHJhH H, 6 lab hrs, 5 cr

This final studio expands upon the knowledge and skills acquired in the core design curriculum. Emphasis is on development of individualized approaches to the design process through the investigation of architectural building typologies in the areas of site, program, and/or technology. The beginning of this course focuses on research and analysis. The second portion of the course is a synthesis of this research into a student’s individual design. The final design is presented to the class through architectural drawings and/or models. Ongoing critiques and final jury presentations are an integral part of the course. Each section has a specific focus of design.

Prerequisite: ARCH 4710 with a grade of C or higher

**ARCH 4830**

**Construction Technology: Special Topics**

2 cl hrs, 6 lab hrs, 5 credits

This course addresses special topics in advanced construction technology. Students are required to engage in the design and documentation of construction technologies.

Prerequisite**:** ARCH 4710 with a grade of C or higher

**ARCH 4831**

**Design to Build**

1 cl hr, 4 lab/studio hrs, 3 cr

This interdisciplinary course uses a hands-on approach that introduces students to Design Build methodology, practice and implementation. Students design, mock-up and build a series of individual projects using a variety of materials and machines to achieve their design. Lectures, demonstrations and fieldtrips are geared to reinforce fabrication methodologies and demonstrate how Design/Build has been integrated into the practices of the design and building industry.

Prerequisite: AAS degree in Architecture or equivalent; Co-requisite: ARCH 3510 or ARCH 3610 or ARCH 3630 or ARCH 4710 or ARCH 4810 or ARCH 4830

of each, will be discussed. Conditions encountered during renovations and.

Prerequisites: ARCH 2480, MAT 1375 or higher, PHYS 1434 or higher

**ARCH 4890**

**Computation and Fabrication: Performative Architecture**

1 cl hr, 4 lab/studio hrs, 3 cr

Performative design in architecture is explored through the framework of biomimicry and algorithmic design. Different topics within performative architecture, such as high performance materials and adaptive building systems, are explored each semester. In addition to the advanced fabrication tools presented in the course, analysis and simulation techniques are utilized in order to evaluate and inform the design of responsive architectural systems.

Prerequisite: ARCH 3690

**ARCH 4900
Internship in Architectural Technology**

1 cl hr, 120 field hrs per semester, 3 cr

Assignment to field work/study situations of approximately eight-to-ten hours per week at one of the following: an architectural office, engineering office, interior design office, architecture, engineering or interior design branch of a municipal agency or corporate design office, construction administration or office practices branch of a construction firm. A drafting position with a non-architectural firm is subject to review. Each student will keep a log/journal to be shared in group seminars. Supervision will be by faculty and by the job supervisor.

Prerequisites: ARCH 2430, ARCH 2411 and approval of internship director

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