Electives List
Spring 2020
Hillier College of Architecture & Design
Nov 14, 2019

Undergraduate Electives

**In addition to the electives below, there are courses that are regularly offered under *AD, ARCH, DD, ID, and INT* course numbers which students may opt to take to fulfill design and/or arch elective requirements. The schedules for those courses can be found on the Registrar's Course Schedule website under the course prefixes noted above.

Course #	Section #	Title	Instructor	Enrollment
AD 490	002	History of Industrial Design Tues 1:00 -4:00 pm	Von Koenig	11
AD 490	004	ECO-TECTURES Wed 11:30 – 2:30	Penalba	14
AD 490	006	Professional Practice and Game Design for Artists Tues 1:00 – 4:00	Ross	FULL
AD 490	452	The Digital Asset: Modeling, Texturing and Managing ONLINE Course	Wendell	18
DD 415	452	Web / Exhibit Development ONLINE Course	Wendell	10
Arch 317	002	Advanced Arch Graphics Wed 11:30 – 2:30 pm	Harp	FULL
Arch 337	002	Building Information Modeling Tues 8:30 – 11:30 am	Benanti	FULL
Arch 530	002	Methods of Arch History Tues 2:30 -5:30	Celik	15
Arch 531H	004	Aspects of Urban Form Tues 10:00 – 1:00	Celik	0
Arch 536	002	Landscape and American Culture Wed 11:30 – 2:30	Navin	FULL
Arch 583	002	Prospecting for Urban Gems Wed 11:30 – 2:30 pm	Moore	12
Arch 583	004	Dynamic Constructions in Arch Thurs 8:30 – 11:30	Parlac	14
Arch 583	452	Building Energy Modeling ONLINE Course	Kim	FULL

(******This course has been approved for the Sustainability minor.)***

Graduate Electives

Undergraduate students with cumulative g.p.a. of 2.8 or higher are encouraged to take 600-level graduate electives. For special permission to do so, print and fill out the form attached, obtain the approval of your undergraduate advisor and the graduate architecture advisor, and submit the completed form to the Office of the Registrar.

Masters students are also encouraged to take 700-level doctoral electives. For special permission to do so, contact the course instructor. Once this approval is conveyed to the graduate advisor, you will be given permission to enter the course.

Course #	Section	Title	Instructor	Enrollment
Arch 645	002	AI, VR, and Architecture Thurs 8:30 – 11:30 am (cross listed with DD320)	Narahara	12
Arch 647	002	Grad BIM Tues 1:00 -4:00 pm	Benanti	13
Arch 662	004	Structural Applications of BIM Wed 11:30 – 2:30 pm	Taher	8
MIP 673	102	Infrastructure Planning in Practice Wed 11:30 – 2:30	Theodore	6
USYS 711	102	The Good City Tues 6:00 – 9:00 pm	Schuman	1

Course Descriptions:

AD 490-002: History of Industrial Design (Von Koenig) This seminar style course will explore issues of class, race, globalization, innovation, sustainability and national identity through the lens of industrial design. We will focus on analyzing and theorizing the greater role objects play in shaping our environments, informing social interactions, as well as other humanistic inquiries into the problematic relationships between design, designers and the industrialized world. This course is focused in theory and history, but is assessed through a variety of deliverables based in critical, design thinking. For more information please contact. For more information please contact gretchen.a.vonkoenig@njit.edu

AD 490-004: ECO-TECTURES: The invention of new Design Forms and Techniques to connect with our natural resources (Penalba) In this class we will research how the physical elements that compose our cities, buildings and interior-scapes have a critical role in the way we feel and mediate with our environment. Students will design new interior spaces, material architectures, and artifacts that reinforces our relationship with the existing natural resources at the same time that think in a new way of designing that responds not only to Human needs but also to environmental urgencies. The challenge will be, not to represent what you see but to unveil the design structures that configure our relationship with the environment and that creates innovative forms of experiencing and inhabiting our built settings.

AD 490-006: Professional Practice and Game Design for Artists (Ross) In this course, we will focus on the game design pipeline from concept, to high fidelity working prototype. This collaborative course involves many different disciplines and skill sets such as narrative design, animation, storyboarding, UI/UX design, level design, visual development, and project management. By the end of this course, you should have an idea of what the production pipeline is for game design and where your skill sets can be applied in this field.

AD 490-452: The Digital Asset: Modeling, Tecturing and Managing (Wendell) Visual effects, 3D Animation, Game design/development and VR/AR all make use of digital assets. These assets often revolve around 3D models that are UVW unwrapped and textured. In the past the level of detail for these assets varied depending on the final media. The current and near future pipelines creates a single level of detail for all digital assets. This course teaches a modern pipeline for high detail modeling, unwrapping and texturing (digital painted textures) for DD, IT, and COM students. As an online course we can provide the offering across the university and bring our expertise into a number of departments. As a single 3 credit course our students interested in learning more specific techniques in these areas (often asked for by our students) can spend a semester developing a reliable and robust pipeline for sophisticated asset development. The specific tools for this class will be industry standard - Maya, 3DS Max, Photoshop, MARI and Substance Painter.

DD 415 Web / Exhibit Development (Wendell) Prerequisites: AD 150, DD 284, IT 201. Instructor may waive or accept alternate prerequisite(s) based on individual student preparation. Overview of multimedia exhibit design dealing with issues of graphic identity human-computer interactions, and information visualization as tools for comprehension, enhanced communication, and effective decision-making. Exhibit types include educational symposia, museum/gallery shows, and online environments. Analyses and creative project(s) are required.

Arch 317-002: Advanced Arch Graphics (Harp) Gives students advanced techniques for architectural expression in traditional media. A basic knowledge of drawing methods, media, materials and projection techniques is assumed.

Arch 337-002: Building Information Modeling: (Benanti) This course explores both technical and philosophical approaches to the use of the computer in architectural analysis, design development, information management, and document delivery. Autodesk Building Systems and Autodesk Revit Building will be used for 3D modeling and 2D documentation employing a systems-approach framework for spatial allocation, energy analysis, and structural considerations. The workings of the foundational information databases of the respective software will be thoroughly explored. Projects requirements will include building program resolution, solar analysis, asset scheduling, document layout, and design visualization. Proficiency with Autodesk Autocad (2D) and understanding of general CAD principles are required prerequisites.

Arch 530-002: Methodologies of Architectural History, Theory and Criticism: (Celik) Prerequisite: ARCH 382. A seminar examining the salient methodologies of architectural history, theory and criticism. Structured around a series of critical texts, with each set of core readings intended to provide a basis for analyzing and assessing the approach in question.

Arch 531H-004: Aspects of Urban Form (Celik) Prerequisite: ARCH 382. An examination of the major forms and patterns of urban development from classical antiquity to the 20th century, considered in relation to the changing conceptions of the city as well as cultural, socio-economic, and political development.

Arch 583-002: Prospecting for Urban Gems (Moore)

Arch 583-004: Dynamic Construction in Architecture (Parlac) The seminar will focus on theories behind kinetic, responsive and adaptive architectural research. It will examine architecture in relation to the latest research in biology, material science, embedded systems, soft robotics, synthetic biology, bioengineering, and will address possible shifts in imagining and re-envisioning materialization of architecture. The course will underline architecture's inseparable link to technology and speculate on new possibilities for architecture as an integrated, responsive, adaptive and productive participant within larger ecologies.

Arch 583-452: Building Energy Modeling (Kim) This course introduces the students to building energy modeling and energy optimization techniques using the EnergyPlus whole-building energy simulation program. Students will practice whole-building energy simulation, including the hourly modeling of dynamic thermal envelope loads and system simulations; and explore various energy efficiency measures to optimize the envelope and system performance of their projects. ******This course has been approved for the Sustainability minor.***

Arch 645-002: AI, VR and Architecture (Narahara) This course will focus on Artificial Intelligence (AI) and Virtual Reality (VR) in the context of Architecture and Urban Design. The recent progress in data science technologies allows us to understand the correlations between artistic designs and their implicit qualities in a quantitative data format, and such data can be further used to extract features related to the attractiveness of artistic expressions using methods such as deep neural networks. Furthermore, use of the immersive VR technologies could help the extraction of such dataset beyond the representations of architectural spaces.

Arch 647-101: Grad Building Information Modeling (Benanti) This course will introduce students to the principles and practice of Building Information Modeling. Course exercises and projects are designed to enrich the students' understanding of the potential of this emerging technology on both a practical and theoretical level. The principal software that we will be using for this course is the latest version of Autodesk Revit Architecture.

Arch 662-004: Structural Applications of BIM (Taher) The course will explore the rising BIM technology with an emphasis on its structural applications as they relate to architectural design. It is designed to help architecture students acquire and develop a more integrated approach to architecture. The course consists mainly of some hands-on training in the use of structural BIM tools and other structural analysis software. Various projects with different types of buildings will be used in the computerized applications. Students will receive some extended training on the use of REVIT in structural applications. Some structural analysis and design programs, such as RISA and ROBOT, are designed to communicate and work with REVIT. Students will be introduced to these programs as well. The course will also include some case studies such as the $611-million Nationals Park, in Washington, DC, illustrating how BIM could be successfully implemented.

MIP 673-002: Infrastructure Planning in Practice (Theodore) Infrastructure planning principles, methods and tools. Through selected examples, acquaintance with infrastructure planning theories and models, quantitative methods of research and analysis, information management, decision making, and implementation techniques.

USYS 711-102: The Good City (Schuman) Prerequisites: Enrolment in Urban Systems Program or by permission of instructor. This course introduces urban systems doctoral students to the various ways in which architects, urban designers, and planners have sought and continue to seek to improve the quality of everyday life in urban and suburban environments through the design of the built environment, both at the scale of neighborhoods and communities and at the scale of buildings. The emphasis is on manipulation of built form, transportation, and public space as responses to perceived problems. Key topic area are housing and neighborhoods, public space, transportation, schools, and hospitals.