HILLIER COLLEGE OF ARCHITECTURE & DESIGN

NJIT New Jersey Institute of Technology

11/21/2022

Spring 2023 - Electives List

Spring 2023 elective offerings are listed below. For A+D and B.S.Arch. students all of these courses count as electives. For B.Arch. students, electives are listed in three categories: 1) Technology Electives, 2) History Theory Electives; and 3) Architecture (College) Electives.

The Spring 2023 NJIT Course Schedule indicates all scheduling information. Search by clicking on the appropriate prefix for each course, listed in the left-hand column (eg. ARCH, ID, AD, etc.). In addition to the electives listed below, students may take independent study courses, and eligible students* may also take advantage of the graduate electives.

Course # Section # Title Instructor

Technology Electives

ARCH 301	102	Digital Modeling & Fabrication	T. Kostandyan
ARCH 337	102	Building Information Modeling	B. Warshowski
ARCH 429	002	Advanced Structures	R. Taher
ARCH 483	008	ST: Passive House	A. Harrington
ARCH 483	102	ST: Pod Praxis	Pellegirino / Firestone
ARCH 483	002	ST: Urban Mobility: Complete Streets	C. Masley
ARCH 483	006	ST: Theories and Practice of Historic Preservation	L. Tucker
ARCH 538	002	Sustainable Architecture	J. Cays
ARCH 543	102	Lighting	M. Feris
ARCH 583	106	ST: Community Revitalization through Land Remediation	C. Santasieri
ARCH 583	104	ST: Design Entrepreneurship and Leadership	N. Mehta
AD 490	002	ST: Design Innovation: Discovering the Metaverse from MOCAP to Text-to-Image Generation	M. Schwartz

History / Theory Electives

ARCH 408	102	Investigations in the Contemporary Landscape	TBA
ARCH 534	002	Aspects of Urban + Suburban Form	G. Esperdy
ARCH 535	102	History of Architectural Ideas	J. Berlinghieri
ARCH 536	102	Landscape and American Culture	TBA
ARCH 557	102	Problems in Modern Housing	V. Diskina
ARCH 559	102	Social Issues in Housing	C. Bobo
ARCH 571		Sustainable City	E. Zipori
ARCH 574	102	Case Studies in Community and Urban Design	L. MacWillie
ARCH 576	102	Architecture of Utopia	B. Akhavan
ARCH 583	108	ST: Infrastructure and Architecture	D. Sollohub
ARCH 583	102	ST: New Jersey Land Art 1965-1985	J. Coleman
ARCH 583	008	ST: History of Urbanism in the M. East and N. Africa	M. Gamal-Eldin
AD 490	004	ST: Designing Narratives: Film Techniques for Every Storyteller	R. Kopp

Architecture Electives

ARCH 317	102	Advanced Architectural Graphics	C. Harp
AD 150	002	Color and Composition	J. Cays
DD 449	002	Imaginary Worlds: Architecture in Motion Pictures	G. Goldman
ID 217	102	Modeling and Manufacturing	(TBA)
ID 341	002	Sustainable Materials and Processes	J. Alcala
INT 351	002	Furniture Design	D. Brothers

Graduate Electives

ARCH 651*	002	Public and Private Development	J. Cosenza
ARCH 684*	002	Topics of Sustainable Urbanism	TBA
ARCH 689*	104	AI / VR in Architecture	T. Narahara
DD 621*	852	Character and Facial Modeling for Animators	M. Rodrigues
DD 622**	852	Visual Storytelling and Storyboarding**	J. Ross
DD 624*	852	Digital Audio	B. Miller
DD 625*	852	Environment Design	A. Wendell
DD 634*	852	Physical Computing for Designers – Interaction Design	A. Wendell
DD 640*	852	User Interface/User Experience in Digital Design	(TBA)

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** Undergraduate students of Architecture with a cumulative GPA of 3.0 or higher can take the DD 622 course. Prior approval of the Director of the School is required before enrolling in the graduate elective DD 622.

Technology Electives

ARCH 301: Digital Modeling & Fabrication (Tigran Kostandyan)
The seminar explores advanced 3-dimensional computer modeling techniques and data export for assembly and fabrication to various computer numerically controlled (CNC) hardware available at the School of Architecture. Specifically, students engage in NURBS and solid modeling using Rhinoceros 3D and export data through various Rhino plug-ins including RhinoCAM. Sequential fabrication exercises culminate in a final project.

ARCH 337: Building Information Modeling (Brandon Warshowski)
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. Project 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 429: Advanced Structures (Rima Taher)
Prerequisite: ARCH 304. This course covers advanced topics in structural analysis, design of reinforced concrete structures, design of steel connections, in addition to some topics in masonry structures. The course also includes design examples in relation to various types of foundation systems. It focuses on indeterminate structures in structural analysis and integrated structural systems in designing structures. Case studies of some well-known buildings are covered. Some BIM applications with computerized calculations are included.

ARCH 483 - ST: Passive House (Anthony Harrington)
This course is a primer into the Passive House standard of construction as a way to reduce building energy use by 75-90% and meet carbon reduction climate goals. Students will review precedent projects, understand the principles of the standard, and put their knowledge into practice by modifying one of their past studio projects (orientation, apertures, detailing) to meet the standard. Prerequisite: ARCH 396

ARCH 483 - ST: Pod Praxis (Erin Pellegirino/Charlie Firestone)
In this course students will be studying and implementing methods for community engagement in the design process. This course will be building upon the work completed by the Pod 1 & Pod 2 studios, but neither studio is a

prerequisite. Students will be continuing to develop the dwelling units and community site design for Hope Village III (a supportive housing community in Newark) through a series of community engagement exercises.

ARCH 483 - ST: Urban Mobility: Complete Streets (Caitlin Masley)
This course will explore and provide students a deeper understanding of the relationship between constructed urban multimodal urban systems and integrated street design. Students will begin with an in-depth research of global urban mobility case studies as a base for a redesign of a local site in New Jersey. The topics include scaling for micro mobility, smart cities integration, electric bike shares, community planning, environmental and ecological impacts.

ARCH 483 - ST: Theories and Practice of Historic Preservation (Lauren Tucker)
This class examines the history, theory and practice of historic preservation. The course will study the theories and concepts underpinning contemporary approaches to the discipline such as heritage, authenticity, replication and underprivileged architectural histories. The course will move from close readings of precedents, both local and global, to a proposed interpretation and intervention within a historic structure in New Jersey.

ARCH 538: Sustainable Architecture (John Cays)
Follows two precepts: accepting responsibility for the consequences of design decisions upon human well-being, and the long-term viability of natural systems. Topics include sustainable site design and development, environmentally sensitive building materials, lifecycle assessment and cost benefit analysis of building systems, and adaptive reuse.

ARCH 543: Lighting (Manny Feris)
Explores, through modeling and calculation, the means by which architectural form and detail influence the luminous environment. Perceptual responses such as visual comfort and delight are examined. Topics include daylighting footprints, model design and testing, and computer-assisted light level analysis. Areas of investigation include the relationship between daylight and electric light in architecture; the variations of light with time; analysis of seasonal and weather differences; role of task in lighting strategies; and means of control for light quantity and quality.

ARCH 583 - ST: Community Revitalization through Land Remediation (Colette Santasieri)
This course introduces students to the process of transforming legacy industrial and vacant commercial properties into community assets. Viewing land remediation and redevelopment through the lens of the triple bottom line, the students will explore ways in which transformation of these properties can improve environmental conditions, catalyze economic development, and create more socially equitable and resilient communities. Students will interact with local government officials, real estate developers, environmental consultants, attorneys, and community planners.

ARCH 583 - ST: Design Entrepreneurship and Leadership (Nidhip Mehta)
This course expands the scope of architecture to investigate implications of the business of design, leadership, empathy, collaboration, and management, especially in global settings.

AD 490 - ST: Design Innovation: Discovering the Metaverse – from MOCAP to Text-to-Image Generation (Mathew Schwartz)
This class will discuss Design innovations enabled by emerging technologies such as; the revolutionary Text-to-Image Generation of DALL-E and Stable Diffusion, Generative Design for environment layouts and 3D models, Augmented Reality, Motion capture for animation and games (including both Weston Hall MOCAP room and a video-based systems), and other advances in design workflows. We will discuss the common question “What is the Metaverse?” and explore how designers will operate within and for this technology. After an initial introduction to the various topics through lectures and demonstrations, the students will choose from the novel tools and embark on their own investigations. They will integrate their newly gained knowledge into their own semester long project and not only use the technology but also contemplate and describe how the technology influences the design process.

History/Theory Electives

ARCH 408: Investigations in the Contemporary Landscape (TBA)
Introduces the design, construction and management of contemporary landscape projects through case studies, field trips, and personal contact with prominent practicing landscape architects. A historical perspective of landscape architecture is used as a context for discussion.

ARCH 534: Aspects of Urban + Suburban Form (Gabrielle Esperdy)
This course examines major forms and patterns of urban and suburban development under modernity, focusing on the industrial and metropolis and its global influence. Changing concepts of the central city and the metropolitan periphery are examined in relation to cultural, socio-economic, and political developments.

ARCH 535: History of Architectural Ideas (Joseph M. Berlinghieri)
Discusses seminal architectural ideas in the western world from Vitruvius to the present day. Read books written by leading architectural theorists and analyze them in detail.

ARCH 536: Landscape and American Culture (TBA)
As in architecture, the parallel discipline of landscape architecture involves artistic intention set in conjunction with utilitarian concerns. As such, designs on the land include the integration of the arts and sciences of human culture with nature. Discusses landscape as a manifestation of American culture.

ARCH 557: Problems in Modern Housing (Viktoria Diskina)
Attempts to provide decent, affordable and well-designed housing for broad segments of society are examined. Dwelling is examined through analysis of proto-typical design solutions in urban environments.

ARCH 559: Social Issues in Housing (Carrie Bobo)
Set against the backdrop of a general crisis of affordability, climate change, and social unrest, how and where do we look for solutions that allow us to create affordable, well-designed housing for broad segments of society? Vernacular housing models are examined to determine climate responsive contemporary design solutions. The course will emphasize creative, visual modes of representing original research.

ARCH 571: Sustainable City (Esti Zipori)
This course will focus on sustainability issues (economic, social and environmental) at an urban scale. The course will provide an overview of existing frameworks and goals and speculate on solutions. This course will focus on recent descriptions and critiques of urban space and proposals for change.

ARCH 574: Case Studies in Community and Urban Design (Lizzie MacWillie)
In-depth investigation of specific real-world problems of urban or community design carried out using case method approach. Current practices in the U.S. and other countries studied using interviews with designers, developers, community groups and government agencies. Site visits, reports and other documents provide important sources of information. Final report with supporting documentation required.

ARCH 576: Architecture of Utopia (Benjamin Akhavan)
Seminar for the review of utopian projects that have attempted to embody and strengthen social ideas through transformations in the structuring of space. Architectural implications of different literary and philosophical utopias analyzed with an emphasis on those experimental proposals which were realized, in whole or in part, in built form.

ARCH 583 - ST: Infrastructure and Architecture (**Darius Sollohub)**
Le Corbusier defines architecture as the "masterly, correct and magnificent play of masses brought together in

light." This course analyzes infrastructure according to qualitative principles of architecture, landscape architecture and urbanism where infrastructure figuratively comes into the "light." The course studies noteworthy examples - built and imagined - of utility, transportation, and communication infrastructures regarding the aesthetic and cultural values that shaped them physically. The course includes discussions of assigned readings, a film screening, multi-media lectures by the professor organized by type and theme, and midterm and final presentations by students.

ARCH 583 - ST: New Jersey Land Art 1965-1985 (**James Coleman)**
This course examines the writings and methodologies of land artists working in New Jersey in the second half of the twentieth century, and their influence on architectural and environmental thinking. Students will study and replicate the practices of these artists including photographing, surveying, and mapping parts of Newark, culminating in a work of their own.

ARCH 583 - ST: History of Urbanism in the Middle East and North Africa (Mohamed Gamal-Eldin)
Global South cities such as those in the Middle East and North Africa (MENA) have long histories as it relates to their origin. This course will challenge the notion of the “Islamic City” by examining the transition in the 19th century from local imperial towns on the periphery of empire into colonization and then westernization, introducing new modes of city planning to the MENA region. The course uses case studies across the region as a lens into a critical take on urbanism as it developed in the nineteenth and twentieth century.

AD 490 - ST: Designing Narratives: Film Techniques for Every Storyteller (Ron Kopp)
This course will examine classic and contemporary films in which design plays a key role in shaping the story’s meaning. We’ll be looking at the relationship between content and form and discussing the production designer’s contributions to the director’s vision. We’ll find rich illustrative examples from the cinema’s earliest pioneers (Georges Méliès, Alice Guy-Blaché, Charlie Chaplin, Buster Keaton, Fritz Lang, F.W. Murnau) all the way up through current masters (folks like Tim Burton, Spike Lee, Jane Campion, Wes Anderson, Lucrecia Martel and Steve McQueen). Equally important, we’ll be considering the special formal and technical aspects of film that combine to make it a unique modern medium, one that nonetheless exerts a powerful influence on all the other arts, as well as the way we understand our world. What lessons can we learn from great filmmaking that are adaptable to the other arts? This elective is geared towards digital designers, industrial designers, and interior designers, as well as architects.

Architecture Electives

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

AD 150: Color and Composition (John Cays)
Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. Introduction to principles of 2D composition with emphasis on color use and color theory. Students are introduced to traditional media (watercolor and collage) and digital raster graphics (painting, image processing, and compositioning). Applications that include interior design, product/industrial design, advertising, web design, and fine arts are discussed. Concepts include grids and hierarchy, color models and mixing, color interaction, human response to color, printing, etc. Creative projects.

DD 449: Imaginary Worlds: Architecture in Motion Pictures (Glenn Goldman)
Prerequisites: AD 112, AD 161, AD 162 or ARCH 211, ARCH 395. Restrictions: DD cohort designation for DD majors only. Like childhood photographs in family albums, movies are part of our collective memories and become a unique way of "remembering" an era or place even one that has never existed or could exist. The study of imaginary worlds in motion pictures provides students with opportunities to gain an awareness of architecture and study it from different perspectives. Movies studied will be limited to those that postulate new, or unique, environments rather than those films that faithfully document reality. Discussions will focus on architectural issues raised by the movies studied as well as those found in critical essays.

ID 217: Modeling and Manufacturing (TBA)
Prerequisite: ID 216. Corequisite: ID 264. Restriction: For Industrial Design majors only, or with department approval. This course will build on the computer modeling techniques of the ID 216 course and combine it with the programs, tools and facilities used in Computer-Aided Manufacturing (CAM). The student will take computer-generated designs and feed them directly into the manufacturing system. The course will also explore Computer Aided Manufacturing as a means of facilitating mass customization: the process of creating small batches of products that are custom designed to suit each particular user.

ID 341: Sustainable Materials and Processes (Jose Alcala)
Prerequisites: AD 201 or ARCH 295. Restrictions: Junior level or higher. The course will comprise of lectures and field trips that take a critical look at the traditional materials and processes used in manufacturing and evaluate alternatives based on research and experimentation. Each student will perform a Life Cycle Analysis (LCA) on an existing product by following the products life from the mining of raw materials to disposal taking particular attention to energy usage, use of natural resources, toxicity and decomposition.

INT 351: Furniture Design (David Brothers)
Prerequisites: INT 264 or ID 264 or DD 364 or FA 264 or ARCH 211. Corequisite: Studio enrollment. This course is an introduction to the concepts, materials and construction technologies involved in the design and fabrication of furniture. It explores the relationship between ergonomics, comfort and function in the design of furniture for both site-specific environments and mass-produced applications. Course includes lectures, field trips and a variety of drawn, modeled, and built design projects.

Graduate Electives

ARCH 651*: Public and Private Development (Joseph Cosenza)
Restriction: completion of core sequence. Introduction to the economic, financial and political aspects of real estate and their effect on architectural decision-making. Topics include: needs assessment, real estate appraisal, financial instruments, regulations and real estate, design as value-adding, and the effect of tax policies on real estate development. This course is required for the dual degree M.Arch./Master of Science in Management program. It can also be used as an elective in the M.Arch. program.

ARCH 684*: Topics of Sustainable Urbanism (TBA)
Cities are growing at an unprecedented speed. Cities currently account for about 70 percent of global carbon emissions and over 60 percent of resource use. We have to develop a vision for more sustainable cities and new protocols and processes to implement more sustainable visions for urban areas. This course will provide an inside into the challenges we face (growing number of slum dwellers, inadequate infrastructure and services); it will provide an overview of goals and existing frameworks and speculate on solutions to address sustainability urban issues.

ARCH 689*: AI / VR in Architecture (Taro Narahara)
Prerequisites: DD 263, DD 264. Prerequisite or corequisite: DD 275. Digital Design majors only, all others with permission of the department. This course will explore the application of desktop, non-immersive virtual reality to the representation of architecture. Course exercises and projects are designed to uncover both advantages and limitations of this emerging technology, on both practical and theoretical levels. The major focus of the course will be personal evaluation of these tools in the design of both object-specific and the spatial in architectural problem solving. The collaborative nature of the toolkit will inform design decisions vis-a-vis observation of participant behavior and open discussion with interactive critics.

DD 621*: Character and Facial Modeling for Animators (Miguel Rodrigues)
Prerequisites: Basic background in in the use and application of digital media in design. The course will introduce students to the language and conventions of manipulating tools and techniques to develop and create 3 dimensional character design.

DD 622. Visual Storytelling and Storyboarding (Jessica Ross)**
Prerequisites: DD 601, DD 602. Storyboarding is the preparation of a conceptual and thematic graphic plan to tell a story using animations, video games, interactive media and experiences, advertisements, music videos, or graphic novels. This course will cover the fundamentals of visual storytelling and the various applications possible in a visual narrative. Techniques for art direction are covered including the use of storyboards, concept art, and animatics to communicate. Students will translate a written narrative into a visual experience in this project-based class with the use of camera framing, camera angles, gesture, and expression. Issues of lighting, color, and mood will be included resulting in a student developed full-story pitch.

DD 624*: Digital Audio (Bruce Miller)
A studio class that provides a baseline understanding of sound design within an animated video and video game environment. Course includes an introduction to sampling, field recording, sound effects, production techniques, mixing, and general sound design for the purpose of integrating and managing the integration of audio in motion pictures, television, video games, and any other sound-supported media. Analytical and creative projects are required.

DD 625*: Environment Design (Augustus Wendell)
Prerequisites: Basic background in in the use and application of digital media in design. Corequisites: The course will introduce students to the language and conventions of manipulating tools and techniques to develop and create simulated environments.

DD 634*: Physical Computing for Designers – Interaction Design (Augustus Wendell)
Prerequisites: Basic background in in the use and application of digital media in design. Design course focusing on two-and three-dimensional visual communication of data, including interactive and scripted/animated communication as well as still-image utilization. Applications may include website creation, information kiosks, exhibit design, educational videos, scientific visualization, and other graphics-intensive projects.

DD 640*: User Interface/User Experience in Digital Design (TBA)
Application of theories, research methods, ethics, and design processes of UI/UX (user interface/user experience) design. Students will research, develop, and test basic UI/UX designs. Design strategies will be discussed as they apply to physical, virtual, and hybrid prototype solutions.

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