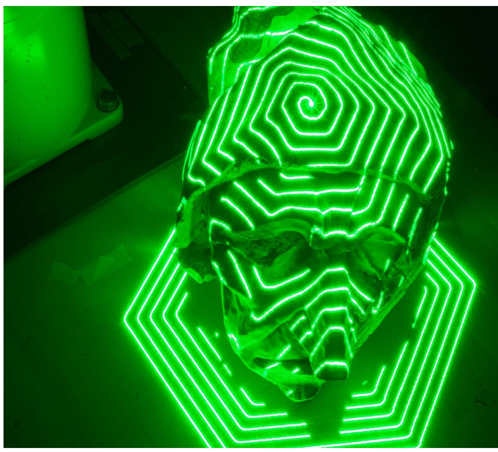
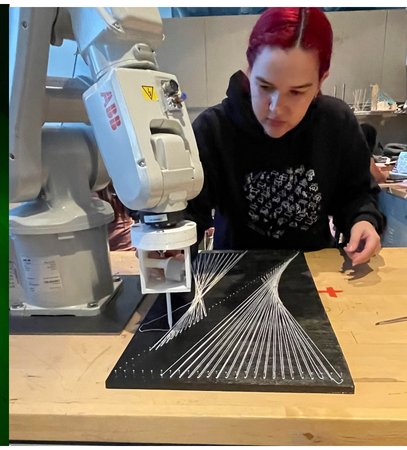
Type of Course: ARCH 51000 Advanced Studio
Class Meetings: M/TH 2:00-5:20pm
Office Hours: Monday 12:00 -2:00; Other days and hours by appointment & optionally virtual
Instructor: Professor Gordon A. Gebert
Location: Studio 320 + Robotics Lab 324
Semester/Year Fall 2024

ROBOTICS, DESIGN AND ARCHITECTURE
Towards a robotics-centered creative design practice

8/9/24

"Examining Robotics and Design Practice"


F'23, Robotic Laser Scanning – K. Gessner;


F'23, Robotic Weaving – S. Perez;


Sp '24, Robotic Light/Motion Studies – D. Hardy

OVERVIEW

Robots are ubiquitous, having become a common tool in many realms. We are now accustomed to seeing robots in warehouses and factories, on the streets as autonomous vehicles, in the air as drones, and on the web to automate many virtual processes including data collection and user interaction. On construction sites, mobile robots are used to carry-out many repetitive tasks and quadriped robots are used for inspection, monitoring and scanning.

In this studio we will look at this broad range of robotic machines and processes as a context against which we will critically explore robots in design, architecture and fabrication, and assess the potential this rapidly expanding technology has to transform, and perhaps disrupt, current and future design practice. By engaging in intensive research and hands-on project work using the industrial robots in the Spitzer Robotics Lab, you will develop a working knowledge of the technology. Using familiar design software including Rhino and Grasshopper, you will examine through direct experience robotics' potentials and its many applications to architectural conceptualization, design, fabrication and construction. We will simultaneously examine through the lens of culture and economics, the outcomes and effects – intended and unintended - of automation in general and of industrial robots in particular.

> *Does the technology expand opportunity and enhance design possibilities? Or, does it present a zero-sum game which affects resource re-distribution and possibly re-order designers' influence? With its capacity to impact careers and employment, and yet render physical labor safer, faster and more efficient,* ***how might we, as designers, cast this potentially exploitative technology in the most favorable, equitable and broadly beneficial way?***

We will employ a collective, highly collaborative, model of learning and working - non-hierarchically to the extent possible. The class will be ‘modeling’, and you will have the opportunity to actively participate in and contribute to, an alternative mode of architectural practice based on collaborative self-directed learning, distributed non-synchronous tutorials and instructional materials, open sharing of knowledge and a mutually-supportive, fully cooperative working environment.

RESEARCH

We will engage in an intense examination of robotics, and automation in general, both of which have been a disruptive force, with tendencies toward further privileging the privileged and rewarding those already in positions of influence. Based on intensive research, reinforced and extended by direct hands-on work with our industrial robots, you will gain “mastery” over the technology while examining the relationship of, and potentials embodied in, industrial robotic manipulator systems and their many present and future applications to architectural conceptualization, design, fabrication and construction. Underlying the course are the tangible and intangible connections between the notions of technology, craft and design.
As the flow of decisions and information from architectural concept through design to construction is currently almost fully digital, robotics presents a challenge and an opportunity to bring production and assembly into closer alignment with the conceptualization and design processes, and in turn, to more fully inform and enrich the practice of design.

> *It is imperative that the design professions take up the challenge to critically examine robotics in the context of what it can yield, and the many ways it might inspire, inform and guide the design process – from nascent concept to finished fabrication.*

We will examine at each step, through the lens of culture and practice, the context, implications, the outcomes and effects – intended and unintended – of industrial robots, as well as technology in general.

> *As designers whose principal role is to propose better futures several guiding questions should be posed:* ***Can we conceptualize ways in which the technology could be deployed in a broadly beneficial and expressive manner? Can technology in general, and robotics in particular, leave a distinct and recognizable mark on our creative output?***

From the first day you will gain hands-on experience with our six-axis robots which are powerful and scalable industrial-grade robotic arms in the Spitzer School. These will be accessible to you throughout the semester. In the initial several weeks we will examine the literature, reports and other published materials relating to robotics in the profession and in society. You will be provided with a base set of full-text readings, as well as extensive resource materials including an extensive selection of on-line tutorials and other instructional items.

An important component of the semester will be production of clear, compelling and complete documentation of your research, your project design, your project development activity and, your deliverables. And, as part of this intensive research and documentation effort you will contribute your findings, as well as your successes and failures to a shared, collective understanding within the Spitzer community. For example, you will be expected to contribute to the Spitzer Robotics on-line reading/materials information base with citations and media you find during your research and literature surveys. Thus, we will be collectively, and directly, contributing to Spitzer’s growing archive of robotics resources, and building a shared knowledge base and skill within the school that will contribute to future student and faculty progress in the use of our growing technology resources.

The class research and project development activity will be supported by lectures, demonstrations, and a wide selection of tutorial materials covering basic robot operation and control as well as coding techniques, most of which are directly related to Rhino, Grasshopper and Maya. You will be provided with ample resources- mostly asynchronous - to learn these new technologies and methods as well as to remediate any individual gaps in understanding of the Rhino, Grasshopper and Maya base applications. After successfully completing an initial orientation dedicated to safety and proper use, you will have extensive access to the robotic systems – the entire Spitzer robotics lab including arms, the software, end of arm tooling, our dedicated equipment and tools and the control systems. You will be able to load the specialized software and plug-ins on your own computer and thus will have immediate and full access to the robust and realistic industry-standard robot simulation software which enables your projects to be accurately carried-out and tested virtually through the specialized software as well as through familiar Grasshopper and Maya interfaces and plug-ins.

PROGRAM

Overview of The Semesters' Activities

In the first days, you will be introduced to the syllabus, the lab, and the robots, supplemented by an initial robotics exercise illustrating and reinforcing the basic components, the general principles and some useful operational details. Building a culture of safety, best practices and lab etiquette, along with formation of a strongly supportive studio community will be overriding objectives of the initial class meetings, and will continue to guide us throughout the semester.

In the first few weeks we will review through lectures and reading the many applications of robotics to the field of architecture and design – from the most utilitarian to the brilliantly creative and complex, from around the world and from our previous Spitzer Robotics student projects. To give reinforcement and substance to this introduction, you will each carry-out, using our robots, a robotic drawing project, learning such things as robotic tooling, software workflow, and the many creative possibilities provided by robotic processes.

After the drawing project is completed, you will engage the robots in a project which involves light, motion and video, meant to illustrate the powerful role of precision motion combined with current video and photographic technology. This will prepare you to produce graphic project documentation including motion analyses and impactful and informative visual deliverables.

As you work on the light, motion and video project, and based on your earlier project experience, the review of robotic applications and possibilities, and, your own research, you will select a final project for the semester. You will conduct further research to support a draft project proposal including documentation of your research, a project description, the outcomes you anticipate and the criteria for evaluating the outcomes. You will also list in detail the resources you will need and safety protocols you will follow to complete the project by the end of the term.

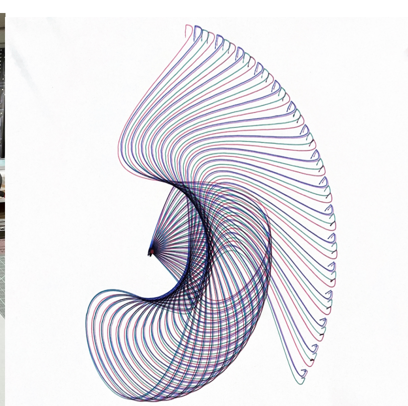
In the latter half of the semester you will refine, develop and document your final project. The deliverables due at the end of the semester will include a full presentation suitable for final review by faculty and invited reviewers. You will also be required to produce a clear and impactful presentation of your robotic work to include in your personal portfolio.

Projects

After a thorough safety and best practices orientation, initial projects/exercises will include the following:

Drawing / Achieving Precise Movement
Motion Control / Capturing & Documenting Programmed Movement
Shaping and Forming / Exploring Movement and Material
Final Project / Demonstrating a Robotic/Design Idea

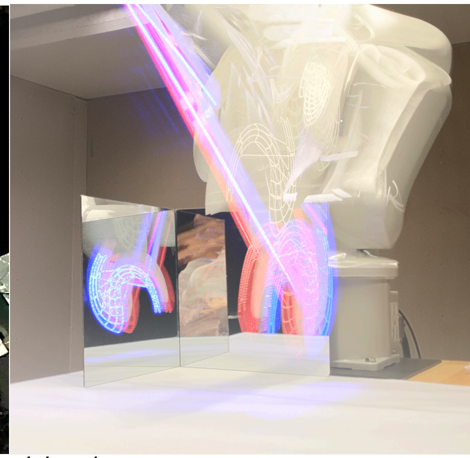
Drawing / Achieving Precise Movement



You will learn and explore ways that robotics can be interactive by starting with something familiar…drawing. We will produce code to control the robot with attached drawing instruments such as pencils, pens and styli drawing on planar material such as paper, marker boards and clay tablets. Objects for holding a pen attached to the end of the arm will be available, and you will have the opportunity to design and produce in the robotics lab additional tooling to explore other media such as wet pigment, ink and other modes of image-making.

Motion Control / Capturing & Documenting Programmed Movement


D.Wen


J Jurado;


O. Ottobek

We will also examine the ways robotic motion can be controlled with increasing precision to carry-out robust image and video capture techniques. You will experiment with and document the nature of robotic motion using such means as mounted cameras recording simple scenes, and mounted lights whose motion can be recorded through animation as well as extended image exposure and video capture. Video recording with cameras affixed to the moving arms will provide an opportunity to explore the emerging field of robotic cinematography, as well as precise and creative control of movement in time will allow experiments with robot choreography and other areas in the exciting and rapidly-evolving realm of robotic entertainment and expression.

Shaping and Forming / Exploring Movement and Material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Above:Milling - J.Moyer – ; Clay Scribing - K. Hernandez'; Foam Cutting -D. Parsan; Labyrinth Cutting – Isaac Corniel

Time and progress permitting, or as a topic for your final project we will also explore the application of robotics to materials and assembly, devising and developing means of mounting tools such as scrapers, small mills (such as a Dremel) and hot wire cutting equipment to cut and form relatively soft and workable materials including foam, clay and sand casts. In addition, we will use mounted gripping devices to assemble simple and light-weight geometric components into compositions, and mount extruders to carry-out additive form-making.

Final Project / Demonstrating a Robotic/Design Idea

At about the third-point of the semester, you will—either individually or as part of a small team—begin to define and prepare a final robotic project to be carried-out in the second half of the semester. This will be a fully-documented conclusion - a project which addresses a specific problem, technique, task or issue related to robotics, architecture and practice. The project should build on your research, the knowledge you have gained, the skills you acquired and the understanding which you have developed. It is expected that this project, by virtue of its topic, execution and thorough and thoughtful documentation, will constitute a significant contribution to the school by providing a tangible asset such as an innovative technique, an extension of an existing approach, a new or expanded insight, an operational piece of software or some similar useful addition to Spitzer's growing robotics capabilities and resources. As with the earlier projects, you will be expected to formulate a clear and concise project description, maintain full documentation of your progress and develop an informative, attractive and compelling final demonstration and presentation for delivery to the class, reviewers and the school's shared robotic knowledge base. Images on the first page are from Spitzer student final projects completed in previous classes.

Studio and Lab – Where we meet and work

This design class will be assigned a regular studio where you will have a desk and other normal studio facilities available, and where the usual school-wide studio policies and practices will be observed. In addition, we will often meet in the Robotics Lab in room 324 (a temporary location for this semester). You will also be able to work with the robots and associated equipment during most studio time and other times, during the week, to be announced. The lab times and policies are necessarily restricted to assure your safety, the security of the robots and other lab equipment, as well as to meet other research and learning activity.

A Final Thought: Robotics in the Spitzer Context

While the three robotic units now in the Spitzer School are relatively small and with limited force-weight capacity, they are complete industrial-grade systems, with significant educational and research benefit because they are fully and directly scalable upwards to the very largest arms available including two large units which are expected to be installed in Spitzer in early Spring 2025, when required facilities and infrastructure are completed. The control software, activating mechanics, geometry and configuration of these units is exactly the same as that utilized across the full range of industrial robotic arms. Therefore, the control programs, techniques and types of effectors, and most important, the experience you will gain using these Spitzer machines, can be easily scaled upwards and moved directly from this relatively compact equipment to that of any size including the very largest available.

An industrial robotic arm is a sophisticated yet highly generalized multi-axis positioning device capable of very precisely programmed motion with accurate positioning and repeatability. This motion is driven by powerful servo motors controlled by on-board digital processors running specialized software. At SSA we utilize several software tools. We focus principally on two Grasshopper plug-ins: principally ROBOTS, and, for certain specialized projects, HAL Robotics Framework. These provide a bridge to Robot Studio, an industrial-grade comprehensive robot control and simulation suite. All of this software can be loaded on your own computers so you can learn and work from nearly any location that has web access.

Robotic Tools

The number, scope and elaboration of functions, processes and tasks the Spitzer robotic equipment can carry-out are nearly endless. One determinant of this flexibility, and a source of great potential, is the physical interface a robotic arm presents to the world – the tools or effectors which when attached to the end of the arm, allow work to be carried-out. The 'wrist' or the 6th axis is a steel flange which is "open" and flexible and to which can be attached an unlimited variety of tools, objects and small systems. Possibilities include all manner of drawing instruments, scribing tools, pointers, grippers and virtually any hand or power tool, extruders, grinders, and milling, gluing, and bonding equipment. Drawing on their precise motion control, connection to robotic arms of cameras, video screens and other visual production devices open an entire realm of possibilities for documentation, expression and entertainment.

Simulation and Performative Testing

Your experience with robotics throughout this course will be enhanced and accelerated by the use of virtual simulation and testing software wherein robot operations, motion control and coding – from simple movement to complex motion, 3-D path definition and tooling – is dynamically and operationally represented in real-time through visually accurate and fully performative computer-based simulation in real time. You can access these simulation systems in the robotics lab and load them on your own computer so that you can develop and verify the control routines – the code – virtually and off-line. When work executes successfully in the simulation, it can be loaded onto the actual robots for a 'real run'. This means you can develop and check your results nearly anywhere and anytime using 'virtual' robots and tools preparing to deploy work on the lab robots for verification and materialization.

READINGS

Following are selected readings related to this course and to robotics in general:

Mahesh Daas and Andrew John Wit, eds, ***Towards a Robotic Architecture**,* Applied Research and Design Publishing

Peter Testa, ***Robotics House – SciArch**,* Thames and Hudson, 2017

Mitch McEwen – *"**Dysbeing**"* -a video lecture presented at Princeton Sch. Of Arch- April, 2021 – 1hr, 36min.. https://vimeo.com/541930616

Gramazio, Fabio and Kohler, Matthias, ***Made by Robots: Challenging Architecture at a Larger Scale**, an* edition of Architectural Design – June 2014

Gramazio, Fabio and Kohler, Matthias,***The Robotic Touch: How Robots Change Architecture***, an edition of Architectural Design, June, 2015

Ruha Benjamin - *"**Race After Technology: Abolitionist Tools for a New Jim Code**"*, Polity Press, 2019

Picon, Antoine, *“**Robotics and Architecture: Experiments, Fiction, Epistemology**”* in *Architecture Design* May-June issue, 2014.

Muro, Mark and Andes, Scott, *“**Robots Improving Productivity – Not costing Jobs**”*, Harvard Bus.Rev, June 2015

Dan Shewan, *“**Robots Destroying Labor**”* – The Guardian (U.S.), January 11, 2017

Gunkel, David J., ***Robot Rights*** – M.I.T. Press, *2018*

“Why Can’t Architects be Automated ?” https://www.architectmagazine.com/technology/why-architects-cant-be-automated_o

ADDITIONAL RESOURCES

BIBLIOGRAPHY

“SSA Comprehensive List of Robotics-related Information”. A definitive list of references related to robotics in architecture. This lengthy list includes information related to all robot systems and related equipment in the SSA Robotics Lab along with information materials related to robots across the globe and in a number of design- and construction-related disciplines. Continually updated. Latest Version – August 2024 – PDF available in the SSA Robotics drop box –
https://www.dropbox.com/scl/fi/bxu867tcglk56eqlrl3xi/3-Robotics-Info-Materials-Update-Fall-24-240810docx.docx?rlkey=ewnzqi51fsea9mte312gvnsts&st=x6nrbfb8&dl=0
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REFERENCES

SSA Robotics Drop Box – Contains extensive full-text reference materials including the robotics plug-ins, related software, Robot Studio and Grasshopper information, tutorials and user-oriented guides. Also includes numerous example files from robotic-based projects carried-out at SSA and a number of other venues.
https://www.dropbox.com/scl/fo/vkdmrzjszgr0o2ls8nj8x/h?rlkey=1f2twcbnwhoyb5871yek8q1y9&st=bdp21lu2&dl=0
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SSA Robotics Platforms -
Platforms are specially-prepared templates for implementing fundamental tasks and illustrating specific techniques on the Spitzer lab robots. Designed to give you a ‘head start’ and generic ‘starting points’ for robotic projects, they consist of Grasshopper, Rhino and other files developed here at SSA, with extensive notes and documentation to serve as illustrative learning-aids. They are included in the SSA Robotics Drop Box (link above)

Full-text Resources
The SSA Robotics Drop Box includes a folder with full-text copies of many of the required readings as well as a large selection of articles, books, papers and dissertations pertinent to robotics, fabrication and other technologic and methodologic topics related to design and computation. Also included are a number of proceedings and other full-text publications. (link above)

Fall 2024 WEEKLY SCHEDULE, M/TH 2:00-5:20pm
Note: schedule below is subject to revision through the duration of the semester.

W1

Th	08.29	**Convocation @ 2:00pm, rm. 107** **Advanced Studio Lottery @ 3:00pm, Aaron Davis Hall** Followed by first studio meeting covering syllabus, lab practices, safety and the initial robotic exercise

W2

Mon	09.02	College Closed (Labor Day), no classes
Th	09.05	**Hour SSA/JEDI Climate Survey (in studio) 2-3pm** Continue, complete and document the initial exercise Sciame Lecture: Maria Carrizosa

W3

Mon	09.09	Studio/Lab Introduce & Begin Robotics Drawing Exercise
Th	09.12	Studio/Lab Sciame Lecture: Lawrence Vale

W4

Mon	09.16	Studio/Lab First Robotic Drawings Due
Th	09.19	Studio/Lab Rudin Lecture: Alan Hantman

W5

Mon	09.23	Studio/Lab – Final Robotic Drawings Due Introduce and Begin Light & Cinematics
Th	09.26	Studio/Lab Continue work on Light & Cinematics Introduction and Discussions of Final Project

W6

Mon	09.30	Studio/Lab – First Light and Cinematics Due
Th	10.03	No Classes

W7

Mon	10.07	Studio/Lab – Initial Final Project Proposal Discussion
Th	10.10	Studio/Lab - Corrected and Expanded Final Project Proposals Due and discussed Sciame Lecture: Anna Pashynska & Tania Pashynska

W8

Mon	10.14	College Closed (Columbus/Indigenous Peoples' Day), no classes
Tu	10.15	Studio/Lab (Classes for a Monday schedule) Final Light and Cinematics Due
Th	10.17	Studio/Lab – Final Project Proposals Due for mid-term assessment Sciame Lecture: Jon Michael Schwarting & Frances Campani

W9

Mon	10.21	Studio/Lab – Work on Final Project fully underway
Th	10.24	Studio - Midterm Reviews Sciame Lecture: Nora Akawi

W10

Mon	10.28	Studio/Lab
Th	10.31	**Mid-semester student assessment of performance and work to date based on assessment criteria template –** Initial Exercise, the drawing project and the light projects taken into account.

W11

Mon	11.04	Studio/Lab
Th	11.07	Studio/Lab Sciame Lecture: Sabine Malebranche

W12
Mon 11.11 Studio/Lab – Interim presentation and class-wide review of final project progress
Th 11.14 Studio/Lab
Sciame Lecture: TBD

W13
Mon 11.18 Studio/Lab
Th 11.21 Studio/Lab

W14
Mon 11.25 Studio/Lab – Interim presentation and review of final project deliverables
Th 11.28 College Closed (Thanksgiving), no classes

W15
Mon 12.02 Studio/Lab
Th 12.05 Studio/Lab

FINAL REVIEWS, Dec 9-13

Mon 9 Dec	Tues 10 Dec	Wed 11 Dec	Th 12 Dec	Fri 13 Dec
Advanced	**Core Studio 1**	**Advanced**	**Core Studio 3**	**Core Studio 5**
Stigsgaard, Brahmbhatt, Hackett Keramati	Horn (coord)	Edmiston, Bolhassani, Gebert	Wainer (coord)	Volkmann (coord)

Mon 12.16 Clean-up Day (all materials, projects, and any other items must be removed from studio) & Robotics Lab Clean-up and Organize
Tu 12.17 End of Semester Assessment (faculty only)

FINALS
Tu 12.17 Student Portfolios due for: SSA/CCNY Archive, etc. as directed by instructor

Fr 12.27 Final Grade Submission Deadline

GRADING/ATTENDANCE POLICIES AND STUDIO CULTURE

Course Expectations:
- That students will develop a high level of independent thought and rigor and a willingness to go beyond both basic project requirements and their own perceived limits and abilities.
- That students will successfully complete all project requirements. No make-up or postponed project submissions will be accepted except in the case of documented medical emergencies or other extraordinary circumstances. Excused absences and project delays must be officially cleared by the professor in advance to be considered valid.

Community Agreement:
- During the first full studio meeting, the professor will make time for an *Hour SSA* session for the JEDI Climate Survey.
- Studio members will work *together* to create a community agreement for interacting together over the semester. Definition: "A consensus on what every person in our group needs from each other and commits to each other in order to feel safe, supported, open, productive and trusting… so that we can do our best work." https://www.nationalequityproject.org/tools/developing-community-agreements

Methods of Assessment:

- Attendance, participation, and contributions in class lectures, discussions and other activities: 20%
  (See section "Lateness and Absences" below)
- Project development in response to semester schedule: 50%
- Project proposal, presentation, level of completion and resolution: 30%

Grading Assessment & Learning Outcomes:

- Students demonstrate the ability to respond to studio discourse and feedback in a consistent and clear manner throughout the semester as demonstrated in the evolution and development of design work.
- Students demonstrate the ability to utilize both digital and manual drawing and model-making techniques to precisely and creatively represent architectural ideas.

  Making and assembling the tools which fit on the end of the robot arms and the fixtures which hold the objects on which your robot is working, is a key aspect of utilizing robots. You will need to apply design standards as well as safety and utility considerations while carrying-out your robotic projects.

- Students demonstrate an understanding of the theoretical and applied research methodologies and practices used during the design process, and test and evaluate recent innovations in the field of architecture.

  Research is at the center of this advanced design course. Emphasis is placed on testing and evaluating the application of robotics to design and architecture through surveys of applications and hands-on design and execution of robotics-based projects related to architecture. Accurate and thorough recording of your research effort is paramount.

- Students demonstrate the ability to prepare a comprehensive program for an architectural project that includes such tasks as: an assessment of client and user needs; an inventory of spaces and their requirements; an analysis of site conditions (including existing buildings); a review of the relevant building codes and standards, including relevant sustainability requirements, and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.

  For each robotics-based project you carry-out, you will develop a proposal or program document analogous to a comprehensive architecture project program as described above. A project proposal template adapted to robotics and design will be supplied as a guide.

- Students demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project, in different settings and scales of development, from buildings to cities. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.
- Attendance: Consistent level of preparation and on-time presence for each studio class and scheduled evening lectures.
- Portfolio: Completion of final portfolio or collection of studio work as directed by instructor and/or coordinator and attendance at all scheduled portfolio related events.

  The final presentations for your robot-based projects will be evaluated as stand-alone documents. They will also be evaluated as informative and high-impact entries in your portfolio.

- Students will be expected to treat the class similar to a design practice in which collaboration, contribution and collegiality are overriding values.

  Robotics – the equipment, the control systems, the tools you make and software are all unique and complex. We will be learning and developing knowledge together, each of us contributing to the robotic knowledge base of the class and of the Spitzer Robotics Lab..

- Safety and best practices are to be understood and practiced in the lab at all times. The safety of every person in the lab, protection of the equipment and careful use of materials is to be an integral part of your learning and daily experience in the lab.

Grading Criteria:

A (+/-) Work meets all requirements and exceeds them. Presentations are virtually flawless, complete, and finely detailed. Work exhibits professional, "museum quality" level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor. Work shows evidence of intense ambition and effort to go beyond expectations, and beyond the student's own perceived limits of their abilities.

B (+/-) Work meets all requirements. Presentations are complete and finely detailed. Work exhibits professional level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor.

C (+/-) Work meets minimum requirements. Deadlines are missed. While presentations may be somewhat complete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution.

D Work is below minimum requirements. Presentations are incomplete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution.

F Work is well below minimum requirements. Student does not develop adequate design process, and/or does not finish work.

INC Grades of "incomplete" are not given under any circumstances unless there is evidence of a medical or personal emergency. In such cases, instructor and student develop a contract to complete work by a specified date, as per CCNY policy. Classes and/or work missed due to illness must be explained with a physician's note.

Notes:
D is the lowest passing grade for B. Arch students. Working in teams does not guarantee the same grade for each team member; grades are based on a range of criteria for each individual student.

For more information on grading guidelines and other CCNY policies and procedures, consult the current CCNY academic bulletins: https://www.ccny.cuny.edu/registrar/bulletins

Office Hours:
I have scheduled approximately 30 regular office hours over the semester, as posted at the top of this syllabus. If a student needs to speak with me in private, they should ask or email in advance to request a specific meeting time. Students may seek office hour appointments to discuss any matters of concern including personal, private matters and general inquiries about course related work, grading, assessment and content.

Probation & Dismissal: for program specific information related to grades, academic standing, probation and dismissal, please see your program academic advisors:
Undergrad: Amy Daniel adaniel@ccny.cuny.edu
Tony Bowles abowles@ccny.cuny.edu

Studio Culture:
Working collaboratively and respectfully on studio assignments, with and alongside others, is an expectation in studio. Studio culture is an important part of an architectural education, and it extends to expectations for Faculty and the School's Administration as well. Please see the Spitzer School of Architecture Studio Culture Policy, which can be accessed on the SSA website here: https://ssa.ccny.cuny.edu/about/policies/.

Absence & Lateness:

Arriving more than ten minutes late to class will constitute an absence. Two unexcused absences will result in a whole letter grade deduction from a final grade; more than four will result in a failing grade. It is expected that all students will participate in all scheduled working, midterm and final reviews and contribute constructively to the discussions.

Absences due to Religious Observances:
Students who will miss any class sessions, exams, presentations, trips, or the like due to a religious observance should notify the instructor at the beginning of the semester so that appropriate adjustments for observance needs can be implemented. This could include an opportunity to make up any examination, study, or work requirement that is missed because of an absence due to a religious observance on any particular day or days.

Readings & Journals:
Students are expected to keep a journal or sketchbook throughout the duration of studio to document their thought process & take notes of any texts, books, terms or references that are mentioned by either the studio critic or fellow classmates and to selectively follow up on these and any other assigned readings before the next class.

Academic Integrity:
As a student you are expected to conduct yourself in a manner that reflects the ethical ideas of the profession of architecture. Any act of academic dishonesty not only raises questions about an individual's fitness to practice architecture, but also demeans the academic environment in which it occurred. Giving or receiving aid in examinations, and plagiarism are a violation of an assumed trust between the school and the student.

Plagiarism, i.e. the presentation as one's own work of words, drawings, ideas and opinions of someone else, is as serious an instance of academic dishonesty in this context as cheating on examinations. The submission of any piece of work (written, drawn, built, or photocopied) is assumed by the school to guarantee that the thoughts and expressions in it are literally the student's own, executed by the student. All assignments must be the student's original work. Any copying, even short excerpts, from another book, article, or Internet source, published or unpublished, without proper attribution will result in automatic failure of the entire course.

The CCNY Academic Integrity Policy: https://www.ccny.cuny.edu/about/integrity

For citations, the Chicago Manual of Style is recommended:
http://www.chicagomanualofstyle.org/tools_citationguide.html

AccessAbility Center (Student Disability Services):
The AccessAbility center (AAC) facilitates equal access and coordinates reasonable accommodations, academic adjustments, and support services for City College students with disabilities while preserving the integrity of academic standards. Students who have self-identified with AAC to receive accommodations should inform the instructor at the beginning of the semester. (North Academic Center 1/218; 212-650-5913 or 212-650-6910 for TTY/TTD). For further information, go to http://www.ccny.cuny.edu/accessability/ or email disabilityservices@ccny.cuny.edu

Health And Wellness Support:
City College's Office of Health and Wellness Services offers free and confidential counseling. Contact: Health and Wellness Services, Marshak Science Building, room J-15: counseling@ccny.cuny.edu.

Gender Based Violence Resources
City College has resources to support you if you have experienced sexual violence, intimate partner/domestic violence, gender-based discrimination, harassment or stalking. For confidential support, you can contact the Student Psychological Counselor: Confidential Advocate at (212) 650-8905 or the Gender Resources Program at (212) 650-8222. If you would like to report sexual misconduct, you can contact the Chief Diversity Officer and Title IX Coordinator, Sheryl Konigsberg, Esq., at (212) 650-6310 or skonigsberg@ccny.cuny.edu. If there is an emergency on campus, you can call Public Safety at 212-650-777 and off campus call 911. For more information, see: https://www.ccny.cuny.edu/affirmativeaction

Library:
The school's library is a shared resource that is necessary supplement to all research and design work. Please direct questions to the library staff or the Architecture Librarian Nilda Sanchez-Rodriguez: nsanchez@ccny.cuny.edu

NAAB (National Architectural Accrediting Board):
The following criteria from the 2020 NAAB Conditions are addressed in this course:

Program Criteria (PC) These criteria seek to evaluate the outcomes of architecture programs and student work within their unique institutional, regional, national, international, and professional contexts, while encouraging innovative approaches to architecture education and professional preparation.

> **PC.2 Design:** How the program instills in students the role of the design process in shaping the built environment and conveys the methods by which design processes integrate multiple factors, in different settings and scales of development, from buildings to cities.
>
> **PC.5 Research and Innovation**—How the program prepares students to engage and participate in architectural research to test and evaluate innovations in the field.

Students should consult the NAAB website www.naab.org for additional information regarding student performance criteria and all other conditions for accreditation.

CONTACT INFORMATION:

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