Teaching Portfolio

Yangchuan Tian

2019-2020

Table of Content

Teaching Philosophy

'Shòu rén yǐ yú, bù rú shòu rén yǐ yú'.
"授人以鱼，不如授人以渔。"

— Liu, An in *'Huai Nan Zi · Shuo Lin Xun'*
语出 刘安 *(B.C. 179 - B.C. 122)* 《淮南子· 说林训》

This is an old Chinese saying which means "giving a man a fish, and you feed him for a day; teaching a man to fish and you feed him for a lifetime." Being an educator, I would read the meaning of "渔," which is "teaching to fish," to be more complicated and profound. My teaching practice and thoughts stem from the diverse range of educational settings I have experienced over my own life and educational journey, and my identity as an architectural designer. Throughout past decades, I considered the knowledge and skills are my fingers, while the logical and systematic learning method is my palm that allows me to develop more comprehensive and further possibilities. My philosophy of teaching has been continually developing from observing and working with outstanding faculty as well as from my own academic experience of pursuing knowledge and self-awareness through design research and teaching. I consider my role as an educator is to expand students' curiosity, to accelerate their process of exploration, and to realize their potentials to an achievable but extraordinary outcome. Together my life, professional, and academic experiences have shaped the way I engage with students' learning process.

A successful educator can fast capture student's aspirations and capable of working with a diverse range of students from different backgrounds and with different academic levels. A good educator is a listener who understands student's demand and uniqueness at their very initial learning stage. The best faculty are the ones who expect the most of me and recognize my humanity and individuality; without fail, these were the same professors from whom I could expect the most. The author, bell hooks, puts this philosophy best in *Teaching to Transgress: Education as a Practice of Freedom*, "As a classroom community, our capacity to generate excitement is deeply affected by our interest in one another, in hearing one another's voices, in recognizing one another's presence." A teacher must consider how every detail will affect the student's desire and ability to learn that includes how the classroom is set up, how well-planned the demonstrations are, how explicit the objectives of the course are, how doable and qualitative the homework is, how thoughtful the feedback is, how flexible the teacher is to students' varied needs and abilities and many other things.

Central to my teaching is to bring science in nature to the future architecture design discipline — challenging the creativity and methodologies of architecture to include the phase of scientific research on biological processes/behaviors, and natural structures/systems, experimenting structure and architecture possibilities with thoughtful consideration of varied design scales and user perspectives. Having experience in architecture design at an art school from studying landscape architecture at a highly research-based university, University of California, Davis, I have great reverence for the natural science-driven design as well as the strong sensibility of the *scale* difference in varied design fields. I understand architecture as another philosophical realm that is the *materialization* of one's thoughts that start with an idea and build in the real world, where philosophy is a study of discovering the *truth* in our subjective and objective world. For instance, a winter session course that I am teaching at Rhode Island School of Design titled "*Architecture as Micro-bio-system*" challenges both groups of undergraduate and graduate students with different design backgrounds to design architecture from the inspiration of nature critically. The final project is to design an animal habitat that drives one's conceptual design towards a practical level that builds on their reflection and creativity. Students will apply their research from natural materials, structures, systems, and behaviors, and then develop an integrative "micro-system" as an architectural unit that is structurally functional.

Throughout the exercises, students will understand the fundamental ideas and techniques of designing innovative natural prototypes, and learn to create a systematic and comprehensive model design of naturally derived forms and systems from architectural perspectives and languages.

In architecture or landscape architecture, the scale of the design is usually quite large. So the way I construct my courses follows my learning process. I describe that the process I work with any new skills or discipline includes stages as emerging (embracing), developing (specifying), and advancing (bridging). For people in emerging stage who have no much-related experience, it will be helpful for them to learn fundamental knowledge and skills, to broaden their scope in the field, and to embrace as much related information as possible to enlighten their interests and opinions. While for people in the developing stage who may already have some reserved knowledge and preferred directions, they will need more specific and more in-depth advice, and also need to improve their proficiency and precision in all aspects. And people in advancing are those who already have some practical experience, and capabilities to research, to analyze, to construct and to design independently. They will need more specific guidance on the bottlenecks of particular issues as well as cross-disciplinary and collaborative studies to enhance their versatility and, more importantly, using their profession and knowledge to explore new ways to solve future problems. Therefore, my teaching methods will not be immutable, but be adaptive and acute with an eternal insight. Reflecting on my own teaching experience, I have been accumulating a range of different approaches to assist students to understand and conquer their academic dilemma. Concerning the broad diversity of students, the way I work with individuals will be adjusted to fulfill their goals and ambitions successfully.

Since we are all in the process of pursuing a certain level in a field or a career, it is exactly the same as students who come to my class with their expectancies. At different stages of their academic career, I will set up different structures of objectives to provide effective and adequate advice for them to have constructive improvement. In all of my proposed course plans, my evaluating and critiquing strategies will also be applied differently at three phases of the course or projects — emerging, developing, and advancing. Under these phases, an effective way of working on a large project will be dissected into small components. This is what I am usually working on a task, so the same strategy I would ask for students. For example, as they begin to work on their process, focusing on several related peripheral topics will help them to get inspirations within a broader scope, and simultaneously, the process will be less overwhelming and more reflecting. In architecture and landscape architecture design, usually, there are many debates or discourse, variables, or factors to thoughtfully analyze in a project, which is the analytical research phase. And the result of it will lead to the schematic design process and concept development. Therefore, the breaking down process will be taught and discussed with students before they start the project. Manipulating multiple components and aspects would be practical to digest the information but also would be reasonable to convince others of your design intentions or decisions through a series of approaches. In the course "*A Contrastive Anatomy by Architects*," the first project consists of a series of four weekly progressive and interrelated assignments with a coherent theme. This process creates a weekly rhythm and allows enough time for students to work on each stage of a large project progressively and effectively. Thus, students will develop their work progressively and accumulatively on their own initiative rather than produce deliverables just for fixed anticipation.

Eight years of academic and professional experiences in the United States — both in and out of the university — have provided me with the skills necessary to be a competent and successful interdisciplinary design educator. The perfection of knowledge and skills are a way to distinguish different levels of education; however, the fundamental goal of education is always to expect students' development and improvement within a specified period. As an educator, I will offer more than inculcating knowledge or skills, but rather seek to endow and cultivate each student a way of observing and thinking that they can carry into their future to find their self-value and design insight.

Inclusivity & Diversity Statement

It is a pleasure to be a *weaver* who interveins students' current potentials and future possibilities. Half of my academic life has been in a diverse learning environment that consists of students with different cultures, backgrounds, experiences, beliefs, and talents to the universe of academia. Students are like stars that each individual has its own unique constitution and orbit. However, their aspirations bring them here with me. It must be a strong trust of a belief that attracts these roaming stars towards a realm of the past and the future. I greatly admire how powerful this invisible energy of these diversities could attract and bond individual stars *together* to light up the galaxy of *infinite* possibilities. The concern of diversity not only becomes the tactic of teaching and critiquing, but also the essence of my course construction.

In my teaching pedagogy, I consider the academic diversity in three learning phases — emerging (embracing), developing (specifying), and advancing (bridging). These phases are applied in course plan as well as in the aspect of critique strategies. To be more specific, in my course *"Architecture as Micro-biosystem*," students in emerging stage would be freshmen, sophomores, students from backgrounds that has minimal overlaps. I will emphasize their learning objectives to be more fundamental and expansive. For example, in the intial analytical research part, comprehensive and introductive lecture is given to open their scope in the field of bio-inspired design and architecture. Then students need to extensively and inter-disciplinarily study nature organisms' structure, or behavior, etc. and use that research to design their 'components' performance. By assimilating related information, they also work with me to come up with their specific interest in this phase. So during the individual desk critique, they will be encouraged to outline the components and draft a "system" diagram to show the relationship among these components that could trigger them to achieve them next approach. So in the emerging phase, students will be asked to expose to more interdisciplinary opportunities, and elemental methodologies will be taught. Students in the developing stage are juniors, seniors, or people who have closely related backgrounds. These students may already have some reserved knowledge and preferred directions, so the way I give them feedbacks will be precise and in-depth. Besides this, this course provides an advanced subject that offers them an excellent opportunity to improve their proficiency and competency in architecture to be future professionals. Students in the advancing phase are graduate students or some of those who already have some practical experiences, and robust capabilities to research, to analyze, to structure their design independently. I prefer to offer these students appropriate guidance on their strength and also help to enhance their versatility by bridging their interest with potential interdisciplinary practice as a challenge. Their learning outcome will be adept at addressing their knowledge and expertise in discovering innovative possibilities. Therefore, diversity in learning requires an instructor to be adaptive and supple to assist students to conquer their academic difficulties and to realize their aspiration in this course.

Every student will be valued and included, so they are more likely to become engaged and motivated, thus being able to push forward their best effort. However, indeed, a welcoming climate for diversity is not enough. Diversity is not only viewed as an inclusive theoretical consideration but also as a practical tool that seeks to ensure that a student does not face unnecessary challenges simply because they feel underrepresented. A specific welcoming exercise called "Declaration of Uniqueness" is carried out in the first class of every course with the end goal of creating an environment of tolerance and respect. Students are to create a document stating at least ten facts that make each one feel like a minority in any way and share it with the class. I will review their uniqueness, and then it could very possibly be introduced and weaved into their design projects as part of their peculiar outcomes. Through this exercise, students embark on a path of acceptance and pride, which helps them realize that diversity is not only about being tolerant and respectful but can also be a powerful instrument towards a better creative life. Students are encouraged to keep on working on their "Declaration of Uniqueness" throughout the semester and in the end, host a

small classroom exhibition of their finished piece. In this way, I hope to emphasize that inclusivity is not the only initiative, but a way of positive thinking and acting that they can carry along in the future.

Turning difficulties in acclimation into competitiveness involves a learning process. Moving from China to the United States, while not speaking the same language, rapidly made me feel disoriented and insecure as an Asian minority. Having to attend school, make friends and lead a normal life proved to be a tremendous cultural and emotional challenge at the time. However, I managed to overcome this experience due — in part — to a special writing teacher who went above and beyond her job as an after school writing tutor, and ultimately became a mentor. With her help and more importantly, her respect, the dialectal and cultural differences that shook my grounds, proved to be a life-changing experience and a lesson in self-respect and perseverance that I will forever uphold. Studying as an international student in the United States for eight years, I have been transformed myself from a fresh international college student, who had a hard time acclimating the foreign institution system, to a more thoughtful and goal-oriented learner, who would love to share these beneficial experiences and transitional methods about overcoming those physical and psychological difficulties. Being grateful to more of those who have helped me and being thankful for many frustrating experiences I have had, I never know how strong I am until being strong is the only choice I have. Being brave gradually becomes my way of doing things, the part of my learning process, and my style of teaching — to encourage students to push their boundaries, to jump out of their comfort zones, and to challenge themselves through each exercise. As an educator, I find it is indispensable for students to realize that *whatever* sets them apart is actually what makes them *unique*: a potential tool for inspiring, thinking, learning, and creating.

Managing a very diverse group of students can surely prove to be complicated and demanding. Therefore, is it vital we realize that regardless of our differences, there are always common grounds to draw from, whether it be interests, traits, cultural backgrounds, disabilities, tastes, or languages? As an international student myself, the hardships experienced surely awake a sense of empathy towards other minority groups, whether based on race, gender, cultural background, physical, or learning disabilities. A tangible way to reinforce this measure and desired ambiance in my classroom is by always presenting references from global designers and case studies from all walks of life. Finding a shared space is a way to build and tend communication bridges between people that may have otherwise missed the opportunity. Information is key to understanding, and diversity is more than welcome.

Course Description

Course One

Architecture as "Micro-bio-system"

Term: *Winter 2020 (Forthcoming)* | *6 Credits* | Instructor : *Yangchuan Tian*
Schedule: *Tuesday and Friday 1:10 - 6:10 pm* | Prerequisites: *Foundation*
Estimated Cost of Materials: *$400* | Capacity: *10-12 Sophomore*

Description

An ecosystem is defined as "a community of interacting organisms and their environmental functions as an ecological unit."[1] So, how could we design a *micro-system* as an architectural unit structurally and functionally? In Ecological Urbanism, the author brought up that, "The relation of architecture and nature found in the abundant literature on sustainability rests on a moral imperative provided by current environmental crisis, which sets, as in a Greek tragedy, the finitude of natural resources against the dismal and infinite cycle of human production and consumption. From this agon emerges the quest for a responsible architecture."[2] Reflecting and innovating from bio-system performance provide our future architecture a greater possibility to be more efficient and adaptable facing environmental challenges. Throughout this course, students will produce a series of speculative demonstrations of their research-based and performance-oriented design by different approaches. Using the City of Providence Museum of Natural History and Planetarium and RISD Nature Lab collections as primary resources, students will conduct in-depth research for different types and scales of forms, from macroscopic to microscopic, from static to dynamic. Students will translate their perceived conduct from the research of natural materials, structures, systems, and behaviors to develop an integrative "micro-system" through physical and digital models, architectural analysis, drawings, and diagrams.

While learning to use fundamental architectural design strategies, students will be expected to bring their own unique backgrounds and skillsets into developing their *micro-system*. To reinforce the logic of the concept, students will develop components of their *micro-system* with parametric prototyping. Grasshopper, a plug-in from Rhinoceros, will be taught and utilized as a tool to model performative, tectonic, and kinetic systems. By learning to create a series of prototypes of their concepts, students will gain the opportunity to create iterations of various *micro-system.* The final project will be a synthesized design proposal with a self-determined "site" dependent on students' concepts and their architectural functions. Weekly project-based critique across studio will occur throughout the term with students and faculty.

---

[1] Oxford English Dictionary

[2] Mostafavi, Mohsen, and Gareth Doherty, eds. *Ecological urbanism*. Lars Müller Publishers, 2016. p.142.

Course Description

Course Two

Landscape Architecture as "Micro-eco-system"

Term: *Fall / Spring (Proposed)* | *6 Credits* | Instructor : *Yangchuan Tian*
Schedule: *Monday and Thursday 1:10 - 6:10 pm* | Prerequisites: *Foundation*
Estimated Cost of Materials: *$400* | Capacity: *10-12 Sophomore*

Description

Ecology is generally described as the study of the interactions of organisms and environment. Ian McHarg states that "Ecology might better be defined as an interdisciplinary study of physical evolution and biological processes of a creature, or a place, as dynamic and interacting, and having limiting factors and exhibiting certain opportunities and constraints."[3] This is not an ecology class, yet our particular interests as landscape architects are focusing upon a part of this great, synoptic concern. We are designers who are living and facing a specific ecological and environmental situation. We have to understand the current climate and environmental crisis from multi-dimensional aspects, and ecology provides us a language and possible solution. The place is a "because." It is and is in the process of becoming. While form and process are indivisible aspects of a single phenomenon, just like structure and behavior, so perceiving and learning from ecological systems allows us as landscape architects to understand form as an explicit point in an evolutionary process. In this course, students will continuously research, design, and develop their own reciprocal and sustainable "micro-ecosystem" throughout the semester.

In order to analyze the relationship between form and process in scales through systematic research, students are expected to analyze different dichotomies, such as simplicity/complexity, uniformity/diversity, instability/stability, etc. Students will extend their discovery by visiting Natural History Museums, Science Museums, preserved site, ecological organizations, as supplement resources, which will allow them to conduct in-depth research on different types and scales of forms and processes, from physical to biological, from macroscopic to microscopic, from static to dynamic, from singular to integrative. Student will then develop a stance and proposition to this effect and system. Like Ian McHarg said, "The insight to the given form is the implication for the made form, and this, for landscape architecture designers, may be its greatest gift of possibilities."

[3] Swaffield, S. (Ed.). (2002). Theory in landscape architecture: a reader. University of Pennsylvania Press.

Course Description

Course Three

A Contrastive Anatomy by Architects

Term: *Fall / Spring (Proposed)* | *6 Credits* | Instructor : *Yangchuan Tian*
Schedule: *Monday or Thursday 1:10 - 6:10 pm* | Prerequisites: *Foundation*
Estimated Cost of Materials: *$400* | Capacity: *10-12 Freshman or Sophomore*

Description

According to the Oxford Dictionary, Anatomy is "The branch of science concerned with the bodily structure of humans, animals, and other living organisms, especially as revealed by dissection and the separation of parts." It is also defined as "a study of the structure or internal working of something."Anatomists are analysts of nature structure, while architects are anatomists of artificial structure. In *Anatomy meets architecture*, David Geffen says, "General notions of architecture are familiar to anatomists, and they frequently use the word in describing the functional structures of cells, tissues, and whole organisms."[4] The way of analyzing architecture closely parallels the study of multi-cellular organisms' structural system. The structure of an organism allows it to mediate certain behaviors, yet the structure of architecture enables the building to perform well without collapsing. Using fundamental architectural drafting and analyzing skills, students will understand the structural system through creating a series of anatomical drawings and analytical diagrams that reveal the form, composition or/and mechanism of various organisms and certain architecture case studies.

Architectural drawing does more than just communicate measured data. It is a language with subjectivities that are inherent in communication of any kind. Architectural drawing is capable of depth in meaning and matter, through its attitudes and qualities. Throughout this semester, students will use two-dimensional drawings, physically and digitally, as a way to describe not only the measured, precise character of three-dimensional "objects." Students will discover that one can reveal, through the process of drawing, the character of three-dimensional "objects" as they are in space by carefully considering the idea of representation as a designed entity. This process will introduce speculation through representation — how to reveal qualities of engagement, movement, and change through the rhetoric of drawing. This process will be carried out through a succession of design tasks that ask students to develop a relationship between representation and object through iterative drawing, acute perception and revelation.

[4] Trelease, R. B. (2006). Anatomy meets architecture: designing new laboratories for new anatomists. The Anatomical Record Part B: The New Anatomist: An Official Publication of the American Association of Anatomists, 289(6), 241-251.

Course Syllabus

Course One
Proposed Syllabus for Course Three
Architecture as "Micro-bio-system"

Term: *Fall / Spring* | *6 Credits* | Instructor : *Yangchuan Tian*
Schedule: *Tuesday and Friday 1:10 - 6:10 pm* | Prerequisites: *Foundation*
Estimated Cost of Materials: *$400* | Capacity: *10-12 Sophomore*

Course Description

An ecosystem is defined as "a community of interacting organisms and their environmental functions as an ecological unit."[5] So, how could we design a *micro-system* as an architectural unit structurally and functionally? In Ecological Urbanism, the author brought up that, "The relation of architecture and nature found in the abundant literature on sustainability rests on a moral imperative provided by current environmental crisis, which sets, as in a Greek tragedy, the finitude of natural resources against the dismal and infinite cycle of human production and consumption. From this agon emerges the quest for a responsible architecture."[6] Reflecting and innovating from bio-system performance provide our future architecture a greater possibility to be more efficient and adaptable facing environmental challenges. Throughout this course, students will produce a series of speculative demonstrations of their research-based and performance-oriented design by different approaches. Using the City of Providence Museum of Natural History and Planetarium and RISD Nature Lab collections as primary resources, students will conduct in-depth research for different types and scales of forms, from macroscopic to microscopic, from static to dynamic. Students will translate their perceived conduct from the research of natural materials, structures, systems, and behaviors to develop an integrative "micro-system" through physical and digital models, architectural analysis, drawings, and diagrams.

While learning to use fundamental architectural design strategies, students will be expected to bring their own unique backgrounds and skillsets into developing their *micro-system*. To reinforce the logic of the concept, students will develop components of their *micro-system* with parametric prototyping. Grasshopper, a plug-in from Rhinoceros, will be taught and utilized as a tool to model performative, tectonic, and kinetic systems. By learning to create a series of prototypes of their concepts, students will gain the opportunity to create iterations of various *micro-system.* The final project will be a synthesized design proposal with a self-determined "site" dependent on students' concepts and their architectural functions. Weekly project-based critique across studio will occur throughout the term with students and faculty.

---

[5] Oxford English Dictionary

[6] Mostafavi, Mohsen, and Gareth Doherty, eds. *Ecological urbanism*. Lars Müller Publishers, 2016. p.142.

Course Objectives

The goal of this course is for students to develop a rigorous research and design practice individually and collaboratively. In the first half of class, students will identify their discovery and design direction through a series of research, readings, lectures and field trips. Each exercise and project will help students to consolidate and interpret their concepts more thoughtfully and thoroughly. Starting from the second half of the class, students will be taught to design functional *components* within an integrative system by exploring different *scales* of natural systems in Grasshopper. Students will practice both fundamental and advanced architectural and computational design strategies to express their system forms through a series of lectures, workshops, and projects.

Understanding of the fundamental ideas and techniques of designing natural prototypes in Grasshopper will also boost their algorithmic skill of creating relationships between the corporeal conceptual patterns and architecture. The design methodologies taught in this course are thoroughly integrated with various design processes and practice, in conjunction with their realization through the introduction of several fabrication technologies, such as laser cutting and 3D printing. This course also functions as a workshop studio for students to learn to create systematic and comprehensive model design of naturally derived forms and systems from architectural perspectives and languages. As an architecture community, we will use conventions of architectural representation and architectural modeling to suggest new ways of understanding the built-in environment both inside and outside of the structures we occupy; we will also use diverse forms of communication and computation to address environmental issues.

Course Goals

- To realize natural performance in the architectural design field more profoundly;
- To engage and understand architectural techniques and capacities of describing three-dimensional forms in space through two-dimensional drawings;
- To originate new effective possibilities of structure from the composition or behaviors of organisms;
- To compare and contrast the demands and tectonics between architecture and natural organisms;
- To evaluate the feasibility of innovative concepts and provide corresponding solutions.

Course Requirements & Student Learning Outcomes

- Methods to draw and produce 2D & 3D architectural drawings and diagrams; ……15%
- Fundamental architectural modeling skills physically and digitally; ……15%
- Basic Rhino & Grasshopper knowledge; ……10%
- Professional verbal presentation strategies and logical architectural thinking; ……10%
- Strategies to develop a research-based architectural scheme independently; ……20%
- Brief history of bio-design and relative application methods in the architecture industry; …..……5%
- A final portfolio that will showcase a wide range of systematic and analytical process with a deep understanding between biotic and architectural structure both artistically and logically. ……25%

Course Organization & Methods of Instruction

This course is comprised of four lectures, three training-based workshops, four projects in two main progressive phases — Phase 1: Component and System Research; Phase 2: Prototyping and Synthesis Design.

Considering this course as an entry-level interdisciplinary architectural studio, instructors will teach students basic model making, architectural drawing skills, research and analysis skills. Students will get inspiration and feedback from instructors in each critique session, including desk critique and Pin-up. Weekly readings will be provided prior to the lecture to support students' understandings of design their "micro-system". Supplemental reading materials will be sent through emails. Instructors will demonstrate the platform and basic operations of Rhino and Grasshopper with case studies through in-class training session. All the tasks are interrelated in a developed sequence. Handouts and assignment sheets will be distributed during each class.

Estimated Cost of Material

Estimated material costs — there is no course fee for this course. However, an estimate of the cost for materials is $400. Expect to apply this amount toward individual project needs. These materials include art supplies, such as Pencils, Sketchbook, Vellum, Bristol, Stonehenge drawing paper, a variety of Olfa knives, a variety of glue, chipboard, museum board, tape, rulers, aluminum cutter, architectural scale and 3D printing ABS (if needed). They are available in RISD store and 3D store.

Laser cutter: $25/semester at BEB. A personal laptop (Windows or Mac) with Rhino ($85 with student discount in RISD store) installed is preferred; if not, students can use the computers at BEB computer lab.

Grading Criteria + Course Expectation

Process and product will be evaluated together. Iteration and other strategies for asserting methodological rigor will be essential for student success. Students will be evaluated for their participation (through their work and their verbal engagement) in every studio session. Students are expected to respond to prompts provided in each assignment brief as well as those offered through class discussion and critique.

Final grades will be based on your assignment completion, evaluation of assignments, engagement with course material, contributions to discussions and critique, and class participation. The percentage breakdown is as follows:

Grade Calculation

Project 1	15%
Project 2	25%
Project 3	10%
Project 4	40%
Attendance & Participation	10%
Total	100%

Project Grading Rubric

(for assessing the performance of each project)

	Advanced (100-85%)	Above Average (85-60%)	Sufficient (60-50%)	Failing (50-0%)
Fulfillment of Assignment (documentation included)	Always complete tasks on time and to completion; goes above the requirements for the assignments, shows considerable engagement with the material/ practice shown in class and assigned readings.	Usually completes tasks on time and to completion; fulfills the assignment and demonstrates engagement with the practice shown in class and any assigned readings.	Sometimes completes tasks on time and to completion; adequately fulfills the requirements, shows some engagement with the topic/prompt	Rarely completes task on time and to completion; does not meet the minimum requirements for the assignment or consider the topic/ prompt
Creativity/ Concept	Successfully uses concept and/or digital materials in inventive and unexpected ways; successful in understanding, synthesizing and applying solutions to design needs relative to the theme & research; possibly unexpected design with thoughtful ideas	Demonstrate an interesting take on concept and materials clearly and effectively; greatly understand, synthesize and apply solutions to most of design cases; the iterative process was mostly well documented as it occurred.	Expresses some creativity with concept or material, maybe very derivative; The iterative process was somewhat documented as it occurred.	Show little or no effort to conceive interesting concept or material usage; the form development process is missing or has not been adequately documented.
Effort / Initiative	Reflects rigorous effort and initiative from the student, possibly outside of material covered in class or projects	Shows considerable effort and initiative to conceive and produce the work	Indicates merely sufficient effort to both conceive and produce the work	Reflected disinterest or very little effort from the student

Quality / Skill	Demonstrates mastery of architectural design techniques, softwares and presentation skills; always present material clearly, using vocabulary and discipline-appropriate vernacular with precision. Content includes introduction, process where necessary and summary of the project, well, prepared, ready and projects vocally; produces outstanding material, well organized and balanced with text, visuals and references. Images are well scanned and treated and there is a good flow of information that can be followed clearly.	Show above average competency and indicates progression of skills with both physical presentation skills and software; always applies acquired skills to satisfy the criteria; produces good work, organizing and balancing text and visuals successfully. Images can be better scanned and some references are missing. Flow of information can be easier to track.	Demonstrate basic competency with drawing, crafting, and digital software; produces material that is fully composed and balanced. Missing relationships between visuals and text. Missing most references. Flow of information can be greatly improved.	Fails to properly produce drawings and models; poor quality of documentation; produces work that is fairly legible; material is not well organized and hierarchy is missing in the text and visuals; references are largely ignored; flow of information is missing.
Participation / Interpersonal	Always engages in critical review of their own work. Always actively listens to and considers peer and instructor feedback. Always actively contributes to the constructive review of peer work; Always uses critique feedback to improve iterative or later work; Always shows respect for others, encourage a collaborative environment and encourages others; always able to receive and give constructive feedback.	Usually listens attentively to presenter and to other people. Usually actively participate in tasks and shows interests; Usually actively contributes to the constructive review of peer work; usually uses critique feedback to improve iterative or later workUsually shows respect for others, encourage a collaborative environment and encourages others; usually is ready to receive and give constructive feedback.	Sometimes engages in critical review of their own work. Sometimes actively listens to and considers peer and instructor feedback. Sometimes actively contributes to the constructive review of peer work. Sometimes uses critique feedback to improve iterative or later work.Sometimes shows respect for others, encourage a collaborative environment and encourages others; sometimes is ready to receive and give constructive feedback.	Rarely to Never engages in critical review of their own work. Rarely to Never actively listens to and considers peer and instructor feedback. Rarely to Never actively contributes to the constructive review of peer work. Rarely to Never uses critique feedback to improve iterative or later work; Rarely shows respect for others, encourage a collaborative environment and encourages others; rarely is ready to receive and give constructive feedback.

Course Grading Scale

(Final grade = each project performance × % of each project)

A	4.00	Outstanding work for exceptional merit
A-	3.70	Excellent, superior performance goes above the requirements, shows considerable engagement
B+	3.30	Good, successful work above average
B	3.00	Good, satisfactory work above average
B-	2.70	Good, above average
C+	2.30	Satisfactory, performance deficient in some respects but meets minimal standards
C	2.00	Satisfactory, performance deficient in some respects but meets minimal standards
C-	1.70	Satisfactory, performance deficient in some respects but meets minimal standards
D+	1.30	Below average, requirements minimally met
D	1.00	Below average, requirements minimally met
F	0.00	Work that is unsatisfactory and a student receives no credit for this course
I	0.00	Incomplete course work

Students will receive Full-term evaluations. The midterm evaluation, as well as individual reviews and pin-ups, will clarify areas that need strengthening. The final grade will, in part, reflect your improvement in these areas. Specific requirements for each assignment and the final review will be determined on a project-by-project basis. Work for each problem must be completed within the specified time frame allotted. Assessment is based upon quality performance in the following categories:

Dedication and commitment to subject; ability to learn the subject; ability to express concepts and ideas with a clear, logical, argument; depth, clarity and significance of research; representation skills are appropriately used to express concepts and ideas; consistency of working process; personal rigor and study attitude; quality of craft of written and visual documentation and representations; design evolution; class participation

Documentation

All selected works must be documented and submitted digitally after each project review/critique. Digital images will be submitted in high-resolution jpegs or tiff formats uploaded as per instructions. All original drawings must be retained in unharmed condition for scanning at the end of the semester.
Submitting your work documentation punctually and qualitatively will also be considered as part of the work evaluation.

Grading Evaluation Policy

All required work must be completed on time. Incomplete work will be reviewed at the discretion of individual faculty. Final grading is based on instructors' evaluation. Your success at transforming observations, questions, and interests into a cohesive proposition, and the progress made over the semester, completeness of assignments participation in discussions and demonstration of a reiterative and comprehensive working process are major components of your evaluation.

This is a fast-paced studio. Absences, excused or otherwise, will set students back and will be difficult to make up. Attendance and promptness to class are mandatory. Arrival to class more than 15 minutes after the beginning of class, missing a scheduled personal review, and/or leaving class early without approval will be considered an absence. If you anticipate being late or absent from class, send email acknowledgement to your faculty no less than 30-minutes prior to class. *Two* unexcused absences will result in automatic failure of the course. Incomplete grades may only be granted for health reasons or personal emergencies. It is your responsibility to immediately notify your instructors in such cases. Grounds for permanent dismissal from class: 2 or more unexcused absences anytime during semester; repeat tardiness; failure to honor academic policies or codes of conduct. No cellphone use in class.

Course Plan

Week	Class NO.	DATE	SESSOIN TYPE	SESSION CONTENT	PROJECT
EMERGING					
			Emerging Phase Learning Outcome	• Independent research on the relationship between nature and architecture; • Fundamental architectural physical modeling skills; • Two-dimensional architectural drawing skills; • Diagrammatic and verbal presentation skills;	
PART 1 - NATURAL COMPONENT AND SYSTEM RESEARCH					
WK1	**1**	Fri. Jan 03	Introduction + Workshop	• Course Introduction; • Workshop #1 - Introduction to Architectural Drawing and Modeling: Overview (leads, line-weights), Drawing Types, Tools and Supplies	• Project #1 assigned - "The Component" • Project #1 is due Jan 10 - Email your final decision of your interests and focus to both instructors no later than Jan 05 @ 6pm.
			Optional Training	• Nature Lab equipment group training on weekend with Lab Coordinator for Imaging and Aquatics, Benedict Gagliardi (4:30PM-6:10PM)	
WK2	**2**	T Jan 07	Lecture + Individual Desk Critique	• Guest Lecture #1 by Biological Programs Designer, Jennifer Bissonette, (at Nature Lab/TBD) about Natural Science and Trans-disciplinary Design; Nature Lab Tour and Equipment Training; • Work Session & Desk Critique	• Prepare to have conceptual sketches and mock-up models ready to show and discuss
			Individual Critique Questions	• What's the major function of each component you choose? • What's the relationship and how can you deploy this relationship potentially?	
	3	F Jan 10	Lecture + Project #1 Review	• Lecture #2 Design Prototyping Theory • Project #1 Pin-up + Review	• Documentation of Project #1 due by Jan 14 @ 6pm • Project #2 assigned — "A Wonderful System" • Project #2 due Jan 17 before class.
DEVELOPING					
			Developing Phase Learning Outcome	• c	
		TBD	Optional Training	• Workshop #2 - CNC, Wood Shop, Laser Cutting and 3D Printing Training Session @ BEB Basement with James Dean	
		TBD	Optional Mid-term Meeting	Private Meeting for Grade Update or Strategy Improvement	
PART 2 - PROTOTYPING AND SYNTHESIS DESIGN					
WK3	**4**	T Jan 14	Lecture + Individual & Small Group Desk Critique	• Lecture #3 Stochastic & Field System Case Study and Workshop • Project #2 Work Session & Desk Critique	

			Individual Critique Questions	• What's the logic of the movement, where does it come from? • What's the spatial potential of this movement? • How will you compose your 2D presentation?	
			Small Group Critique (assigned group, presentation format will be given)	3 or 2 people in a group, each person use 3 minutes to describe their logic of the movement to the peers, and how they will graphically express the spatial quality. Each students will write no more than 120 words reflection based on their group critique, for example, what are some new ideas, and concisely describe what's the unmet part and how they will improve their work (email instructors by the end of the class).	
	5	W Jan 15	Workshop + Walk-Through Critique	• Workshop #3 - Grasshopper Training Session • Work Session & Project #2 with Informal and optional Critique	
			Critique Questions	Provide feedbacks to specific questions from students	
	6	F Jan 17	Project #2 Review	• Project #2 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #2 due by Jan 21 @ 6pm • Project #3 assigned — "Digital & Physical System Prototypes" • Project #3 is due Jan 24 before class.
ADVANCING					
			Advancing Phase Learning Outcome	• Profound understanding and thoughtful design approach in bio-inspired architecture; • Proficient physical modeling skills; • 2D & 3D architectural representation skills; • Professional and effective presentation skills; • A final portfolio showcase the systematic and analytical design process throughout the semester	
WK4	**7**	T Jan 21	Workshop + Individual Desk Critique & Group Discussion	• Work Session & Project #3 Desk Critique	
			Individual Critique Questions	• Which part of the component/movement does your prototype focus on? • What's the characteristic of it from your observation that you would like to do more experiment with?	
			Quick Group Workshop	Drawing will be pinned anonymously. Each student will speak one sentence to the entire class to one digital drawing they've produced. Comments will be given at the end.	
	8	F Jan 24	Lecture + Project #3 Review (Guest Critic TBD)	• Lecture #4 Ecosystem and Environmental Design Strategy • Project #3 Due + Review	• Documentation of Project #3 due by Jan 28 @ 6pm • Project #4 assigned — "Micro-system" • **Deliverables: Final Due Feb. 04**
WK5	**9**	T Jan 28	Individual Desk Critique	• Project #4 Working Session + Desk Critique	
			Individual Critique Questions	• Student describe their final site selection; concept; program system & function; final goal	
	10	W Jan 29	Rotating Small Group Critique	• Project #4 Work Session & Desk Critique	
			Critique Questions	• 3 or 2 people in a group, discuss their final goal and describe their current work; each student should provide at least one comment to the rest of students; collect feedbacks and write a draft of their reflection & final design intention 50-100 words (email instructors by the end of the class).	

	11	F Jan 31	Individual Desk Critique	• Project #4 Working Session + Desk Critique - 50% done as expected	
			Individual Desk Critique	• Review the final critique criteria with each student (maybe particular for each one); • Identify areas of strength as well the weakness that need to address more effort; • Review presentation skills	
	!	Feb 02+03 time TBD	Final Documentation Start	• Models and drawings should be done and ready to be documented; • Individual model-photograph time will be assigned; • Final Digital portfolio should be uploaded no later than Feb 6 @6pm;	
WK6	**12**	T Feb 04	Project #4 Review + Clean up	• Project #4 Pin-up + Review (Guest Critic TBD)	• Project #4 Pin-up + Final Review (Guest Critic TBD) • Final works should be pinned up 30 mins before class. • Documentation of Project #4 due by Feb 6 @ 6pm for grading

Proposed Assignment

- Project #1 Assigned — "The Component" — This is a research-based project. By observing and examining the specimens at the RISD Nature Lab, students will be asked to choose three different living/static components, such as structures, patterns, living behaviors, natural properties, ecological functions, etc. This project asks students to translate the selected "component" into an abstract three-dimensional structure — rather than creating a sculptural or artistic form, the model focuses more on the mechanism behind the form.

- Student will also be expected to understand two-dimensional drawings as a way to describe the measured, precise characteristics of three-dimensional objects as they are in space by carefully considering the idea of representation as a designed entity.

Requirements & Deliverables:

- Students will create one sketch model (no smaller than 8" cube size) for each component to reveal its potential characteristic of your interest. Different strategies of making models are welcomed. The basic technique of making architectural models will be shown and taught in class. Material could be fabric, wood, wires, Bristol, chipboard, cardboard, etc.
- Students are also asked to descriptively "dissect" these components through a set of precise and measured orthographic projection drawings (one plan and two sections 1"=1'-0" scale). These drawings should be precisely measured and should convey depth and hierarchy through the use of line weights. Drawings for each component should layout on a 10"×10" Stonehenge paper (one drawing on each paper). Total of three papers at least.
- Analytical sketches and notes should be scanned and shown as supplements for review.
- The images/photographs of selected components need to be presented at final review.
- Project #1 is due Jan 10 - Email your final decision of your interests and focus to both instructors no later than Jan 05 @ 6pm.

- Project #2 Assigned — "A Wonderful System" — Now you are asked to advance your system by adding performative and functional aspects through research on your components. A new drawing has to describe an animate quality of that component in "layers." Drawings could imagine or be inspired from the steps of the component's activity/behavior/movement — floating, flying, contracting, rotating, etc. Analytical research needs to be shown in the drawing to demonstrate your logic and concept. This exercise introduces speculation through representation — how to reveal qualities of engagement, movement, and change through the rhetoric of drawing. This process will be carried out through a succession of design tasks that ask students to develop a relationship between representation and object through iterative drawing, a process of acute perception and revelation.

Requirement & Deliverables:

- Drawings could show the exploring changes in orientation with/of the object in space as well as telling a story of how each works as an individual system. The process of re-drawing will serve as a transformational tool, to speculate on the spatial possibilities embedded within the component character. The goal is to understand how representation is an active agent in the design process, and how 2D drawings represent 3D objects in time and space. Drawings for each component should layout on a 18"×24" Stonehenge paper as well as the diagram drawing (3 papers in total).

- Project #2 due Jan 17 before class.

- Project #3 — "Digital & Physical System Prototypes" — Inspired from your previous drawings, this assignment pushes you forward to create three physical models and a series of images of each conceptual natural system component — Fractal, Stochastic, Field, etc. There are many algorithm-based patterns which match the rules in the physical world. In this phase, students will grasp the fundamental expertise of algorithmic design tool (Grasshopper and plug-ins) to visualize the natural pattern or ecosystem which you are interested in. What we use Grasshopper to create is neither a real functional building element nor a pure form without meaning but a prototype which has the potential to meet various demands by changing the parameter of its components. In this exercise, you will test by changing the parameters of two components and use one or two design properties (i.e. sunlight orientation, user circulation, wind direction, etc) as a target to judge the variable results. The way of practice in the field will predict the setbacks for architects to make better design decision.

Requirement & Deliverables:

- A series of at least four digital prototype rendering images of each component are required related to your conceptual design of structural skin, flexible envelope, growth pattern, or propose your own (Details of the digital requirement TBD).
- Creating a PDF includes the picture of your components, the screenshots of your Grasshopper codes and at least eight rendering images. During the review, students will be expected to conclude one clear thesis point on how the change of these parameters result in what kind of design performance you want.
- *Software instruction and samples will be provided in class.

- Project #3 is due Jan 24 before class.

- Project #4 Assigned — "Micro-system" — For the final project, each student will design an animal shelter in a self-defined area. For example, it can be an urban habitat for coyote or raccoon, a highway safety sky bridge/ corridor for deer, a wetland pavilion for flamingos, or a canopy for silverback gorillas. Students will adapt their initial abstract system to the specifically self-defined "site" for specific animals throughout the development of previous projects. As the context of the project, this "site" should be considered as a location with certain kinds of ecological/environmental/social/cultural conditions, that your "micro-systems" would work as a solution. Your design proposals will need to combine adaptable space with fixed self-defined programs and structural construction. Your three components should be integrated as a "DNA" of your system — each function should be demonstrated clearly with diagrams, such as how they work together reciprocally throughout the time from the animals' perspective. The final project requires re-thinking and re-imagining the interface between these things to create an innovative "micro-system."

Requirement:

- The final design proposals should be drawn from a close analysis of the "site" as a motivator of architectural form and consider how to transform (improve, through connection, for example) existing site conditions.
- Students must consider and represent how the edges of site and building dialogue with surrounding terrain, mass transit, circulation, context, etc.
- Everything you've produced before should be pinned up for final review.

Deliverables: Final Due Feb. 04

- 100 Word Explanation of Design Intentions
- Conceptual Diagrams of Initial Components
- Site Plan @ scale TBD with instructors
- Analytical Diagrams: system functions, circulation, programmatic, site strategies

- Physical Model @ scale TBD with instructors
- Plan and Section Drawings @ scale TBD with instructors
- 3D Representation including at least one eye-level Site Perspective or Axonometric

- Final works should be pinned up 30 mins before class in advance.
- Documentation of Project #4 due by Feb 6 @ 6pm

References & Bibliography

- Armstrong, Rachel. Vibrant architecture: Matter as a codesigner of living structures. Walter de Gruyter GmbH & Co KG, 2015.
- Bergdoll, Barry, Dario Gamboni, and Philip Ursprung. *Nature Design: From Inspiration to Innovation,* edited by Museum für Gestaltung Zürich, Angeli Sachs. Lars Müller Publishers, 2007.
- Daston, Lorraine J., and Peter Galison. *Objectivity*. New York, Zone Books, 2007.
- Ingold, Tim. *Making: Anthropology, Archaeology, Art and Architecture*. Routledge, 2013.
- Jasen, Theo. *The Great Pretender.* 2nd ed., Rotterdam, 010 Publishers, 2009.
- Lewis, Paul, Marc Tsutumaki, and David J. Lewis. *Manual of Section*. Chronicle Books, 2016.
- Mostafavi, Mohsen, and Gareth Doherty, eds. *Ecological urbanism*. Lars Müller Publishers, 2016.

Reading, Material, Resources

- The collections at RISD Nature Lab include *Tiny Town, Micropolis, Nearly Nanoville, Arthur Loeb Design Science Teaching Collection,* and the *Edna W. Lawrence Natural History Collection*.
- Required equipment: To conduct work in this course, students will need a laptop computer running a recent Mac or Windows OS. Students should bring their laptop to class every session.
- Programming languages and required software: Programming will be taught predominantly in Processing, but will also include shallower dives into Arduino, JavaScript, and other computational tools.
- No textbook required. Weekly readings will be assigned accordingly (to be announced).
- Additional materials will be available in Google Drive or RISD Digication.

Academic Policies and Codes of Conduct

Please refer to the following documents for information regarding grading, academic integrity, policy and procedures:

- RISD Academic Code of Conduct http://www.risd.edu/Policies/Academic/
- RISD Policies and Code of Student Conduct http://www.risd.edu/Students/Policies/
- Policies as detailed in the RISD course announcement: http://departments.risd.edu/registrar/web/index.html
- An Installation Site Permit is required for any projects that require the use of non-classroom space or that could potentially pose a safety risk. A form is available here with further details: http://info.risd.edu/environmental-health-safety/
- Projects may not pose hazards that threaten or cause physical harm to yourself or others.
- Projects may not cause damage to studio, shop, and lab equipment or school facilities.
- We will expect and maintain behavior in class that establishes and preserves an atmosphere appropriate for teaching and learning.

Disability Statement

Disability support | Disability Support Services (DSS) assists RISD students who have either cognitive (learning) or physical disabilities. If you believe that you have a physical or cognitive disability that may impact your academic standing and requires an accommodation, please see this link for more information: http://www.risd.edu/Students/Wellness/Disability_Support/

Pre- And Co-Requisites

This course is open to Freshman, Sophomore, Junior, Senior, and Grad from all majors. No prerequisite for this course.

Shop Policies

BEB Digital Fabrication: https://info.risd.edu/beb-digital-fabrication/#beb-digital-fabrication
RISD Nature Lab Training: https://naturelab.risd.edu/equipment/

Course Syllabus

Proposed Syllabus for Course Three

A Contrastive Anatomy by Architects

Term: *Fall / Spring* | *6 Credits* | Instructor : *Yangchuan Tian*
Schedule: *Monday or Thursday 1:10 - 6:10 pm* | Prerequisites: *Foundation*
Estimated Cost of Materials: *$400* | Capacity: *10-12 Freshman or Sophomore*

Course Description

According to the Oxford Dictionary, Anatomy is "The branch of science concerned with the bodily structure of humans, animals, and other living organisms, especially as revealed by dissection and the separation of parts." It is also defined as "a study of the structure or internal working of something."Anatomists are analysts of nature structure, while architects are anatomists of artificial structure. In *Anatomy meets architecture*, David Geffen says, "General notions of architecture are familiar to anatomists, and they frequently use the word in describing the functional structures of cells, tissues, and whole organisms."[7] The way of analyzing architecture closely parallels the study of multi-cellular organisms' structural system. The structure of an organism allows it to mediate certain behaviors, yet the structure of architecture enables the building to perform well without collapsing. Using fundamental architectural drafting and analyzing skills, students will understand the structural system through creating a series of anatomical drawings and analytical diagrams that reveal the form, composition or/and mechanism of various organisms and certain architecture case studies.

Architectural drawing does more than just communicate measured data. It is a language with subjectivities that are inherent in communication of any kind. Architectural drawing is capable of depth in meaning and matter, through its attitudes and qualities. Throughout this semester, students will use two-dimensional drawings, physically and digitally, as a way to describe not only the measured, precise character of three-dimensional "objects." Students will discover that one can reveal, through the process of drawing, the character of three-dimensional "objects" as they are in space by carefully considering the idea of representation as a designed entity. This process will introduce speculation through representation — how to reveal qualities of engagement, movement, and change through the rhetoric of drawing. This process will be carried out through a succession of design tasks that ask students to develop a relationship between representation and object through iterative drawing, acute perception and revelation.

---

[7] Trelease, R. B. (2006). Anatomy meets architecture: designing new laboratories for new anatomists. The Anatomical Record Part B: The New Anatomist: An Official Publication of the American Association of Anatomists, 289(6), 241-251.

Course Objectives

The goal of this course is for students to develop a rigorous research and analysis practice individually. The first half of the course, students will identify their discovery and illustrate their analysis through a series of lab research, readings, lectures and field trips. Each exercise and project will help students to comprehend and interpret the structural intention behind the form more thoughtfully and thoroughly. Starting from the second half of the course, students will be introduced to representative structural systems of historic and modern architecture. Students will bridge their expertise in analyzing an "organism" to understand the structural hierarchy and structural purpose of architecture. By exploring the structure system in different categories and scales, students will practice their fundamental analytical methodology and eloquent graphic presentation skills to create an effective conversation between biotic form and architecture system. This methodology forms a basis/foundation applicable to all elements of design.

Course Goals

- To engage and understand architectural techniques and capacities of describing three-dimensional forms in space through two-dimensional drawings more profoundly;
- To experiment with means and methods of capturing animations through two-dimensional drawing techniques;
- To develop a rigorous research and analysis practice individually;
- To originate new possibilities of structural components from the composition or behaviors of organisms;
- To collaborate the demands and tectonics between architecture and natural organisms;
- To evaluate the feasibility of innovative concepts and provide corresponding solutions.

Course Requirements & Student Learning Outcomes

- Brief history of bio-design and relative application methods in architecture industry; ……5%
- Methods to draw and produce 2D & 3D architectural drawings and diagrams; ……20%
- Profound understanding of visualizing animated form; ……20%
- Professional verbal presentation strategies and logical architectural thinking; ……10%
- Strategies to develop a research-based architectural scheme independently; ……20%
- A final portfolio that will showcase a systematic and analytical process of deep understanding in structure both artistically and logically. ……25%

Course Organization & Methods of Instruction

This course is comprised of three lectures, three training-based workshops, four projects in two main progressive phases — Phase 1: Biotic & Anatomic Theme Research; Phase 2: Systematic and Animated Architecture Analysis. Considering this course as an entry-level interdisciplinary architectural studio, the instructor will teach students basic architectural drawing skills, research and analysis skills. Students will get inspiration and feedback from instructors in each critique session, including desk critique and group reviews, as well as from peers during small group discussion and student led artist presentation. Field trips to RISD Nature Lab, Fleet Library and RISD Museum special collection will be held; weekly readings will be provided prior to the lecture to support students' understanding related assignments and to enlighten the overall course comprehension. Supplemental reading materials will be sent through emails. The instructor will demonstrate the platform, analytical method, and representing skills with case studies through in-class training session. All the tasks are interrelated in a developed sequence. Handouts and assignment sheets will be distributed during each class.

Estimated Cost of Material

Estimated material costs — there is no course fee for this course. However, an estimate of the cost for materials is $200. Expect to apply this amount toward individual project needs. These materials include art supplies, such as Pencils, charcoal pencils, Color pens, Sketchbook, Vellum, Bristol, Stonehenge drawing paper. Extra tools and materials will be determined by both students and instructor towards individual project goals and related representing method. A list of possible material includes, avariety of Olfa knives, a variety of glue, chipboard, museum board, tape, rulers, aluminum cutter, architectural scales, etc.

Extra information need to know in advance (may or may not be applied in this course): Laser cutter: $25/ semester at BEB. A personal laptop (Windows or Mac) with Rhino ($85 with student discount in RISD store) installed is preferred; if not, students can use the computers at BEB computer lab.

Grading Criteria + Course Expectation

Process and product will be evaluated together. Iteration and other strategies for asserting methodological rigor will be essential for student success. Students will be evaluated for their participation (through their work and their verbal engagement) in every studio session. Students are expected to respond to prompts provided in each assignment brief as well as those offered through class discussion and critique.

Final grades will be based on your assignment completion, evaluation of assignments, engagement with course material, contributions to discussions and critique, and class participation. The percentage breakdown is as follows:

Grade Calculation

Project 1	15%
Project 2	25%
Project 3	10%
Project 4	40%
Attendance & Participation	10%
Total	100%

Project Grading Rubric

(for assessing the performance of each project)

	Advanced (100-85%)	Above Average (85-60%)	Sufficient (60-50%)	Failing (50-0%)
Fulfillment of Assignment (documentation included)	Always complete tasks on time and to completion; goes above the requirements for the assignments, shows considerable engagement with the material/ practice shown in class and assigned readings.	Usually completes tasks on time and to completion; fulfills the assignment and demonstrates engagement with the practice shown in class and any assigned readings.	Sometimes completes tasks on time and to completion; adequately fulfills the requirements, shows some engagement with the topic/prompt	Rarely completes task on time and to completion; does not meet the minimum requirements for the assignment or consider the topic/ prompt
Creativity/ Concept	Successfully uses concept and/or digital materials in inventive and unexpected ways; successful in understanding, synthesizing and applying solutions to design needs relative to the theme & research; possibly unexpected design with thoughtful ideas	Demonstrate an interesting take on concept and materials clearly and effectively; greatly understand, synthesize and apply solutions to most of design cases; the iterative process was mostly well documented as it occurred.	Expresses some creativity with concept or material, maybe very derivative; The iterative process was somewhat documented as it occurred.	Show little or no effort to conceive interesting concept or material usage; the form development process is missing or has not been adequately documented.
Effort / Initiative	Reflects rigorous effort and initiative from the student, possibly outside of material covered in class or projects	Shows considerable effort and initiative to conceive and produce the work	Indicates merely sufficient effort to both conceive and produce the work	Reflected disinterest or very little effort from the student

Quality / Skill	Demonstrates mastery of architectural design techniques, softwares and presentation skills; always present material clearly, using vocabulary and discipline-appropriate vernacular with precision. Content includes introduction, process where necessary and summary of the project, well, prepared, ready and projects vocally; produces outstanding material, well organized and balanced with text, visuals and references. Images are well scanned and treated and there is a good flow of information that can be followed clearly.	Show above average competency and indicates progression of skills with both physical presentation skills and software; always applies acquired skills to satisfy the criteria; produces good work, organizing and balancing text and visuals successfully. Images can be better scanned and some references are missing. Flow of information can be easier to track.	Demonstrate basic competency with drawing, crafting, and digital software; produces material that is fully composed and balanced. Missing relationships between visuals and text. Missing most references. Flow of information can be greatly improved.	Fails to properly produce drawings and models; poor quality of documentation; produces work that is fairly legible; material is not well organized and hierarchy is missing in the text and visuals; references are largely ignored; flow of information is missing.
Participation / Interpersonal	Always engages in critical review of their own work. Always actively listens to and considers peer and instructor feedback. Always actively contributes to the constructive review of peer work; Always uses critique feedback to improve iterative or later work; Always shows respect for others, encourage a collaborative environment and encourages others; always able to receive and give constructive feedback.	Usually listens attentively to presenter and to other people. Usually actively participate in tasks and shows interests; Usually actively contributes to the constructive review of peer work; usually uses critique feedback to improve iterative or later workUsually shows respect for others, encourage a collaborative environment and encourages others; usually is ready to receive and give constructive feedback.	Sometimes engages in critical review of their own work. Sometimes actively listens to and considers peer and instructor feedback. Sometimes actively contributes to the constructive review of peer work. Sometimes uses critique feedback to improve iterative or later work.Sometimes shows respect for others, encourage a collaborative environment and encourages others; sometimes is ready to receive and give constructive feedback.	Rarely to Never engages in critical review of their own work. Rarely to Never actively listens to and considers peer and instructor feedback. Rarely to Never actively contributes to the constructive review of peer work. Rarely to Never uses critique feedback to improve iterative or later work; Rarely shows respect for others, encourage a collaborative environment and encourages others; rarely is ready to receive and give constructive feedback.

Course Grading Scale

(Final grade = each project performance × % of each project)

A	4.00	Outstanding work for exceptional merit
A-	3.70	Excellent, superior performance goes above the requirements, shows considerable engagement
B+	3.30	Good, successful work above average
B	3.00	Good, satisfactory work above average
B-	2.70	Good, above average
C+	2.30	Satisfactory, performance deficient in some respects but meets minimal standards
C	2.00	Satisfactory, performance deficient in some respects but meets minimal standards
C-	1.70	Satisfactory, performance deficient in some respects but meets minimal standards
D+	1.30	Below average, requirements minimally met
D	1.00	Below average, requirements minimally met
F	0.00	Work that is unsatisfactory and a student receives no credit for this course
I	0.00	Incomplete course work

Students will receive Full-term evaluations. The midterm evaluation, as well as individual reviews and pin-ups, will clarify areas that need strengthening. The final grade will, in part, reflect your improvement in these areas. Specific requirements for each assignment and the final review will be determined on a project-by-project basis. Work for each problem must be completed within the specified time frame allotted. Assessment is based upon quality performance in the following categories:

Dedication and commitment to subject; ability to learn the subject; ability to express concepts and ideas with a clear, logical, argument; depth, clarity and significance of research; representation skills are appropriately used to express concepts and ideas; consistency of working process; personal rigor and study attitude; quality of craft of written and visual documentation and representations; design evolution; class participation

Documentation

All selected works must be documented and submitted digitally after each project review/critique. Digital images will be submitted in high-resolution jpegs or tiff formats uploaded as per instructions. All original drawings must be retained in unharmed condition for scanning at the end of the semester. All work will be stored flat. All work must be documented and presented for final review/evaluation. Students will also submit a digital "book" of their work—fitted to a pre-formatted template. Submitting your work documentation punctually and qualitatively will also be considered as part of the work evaluation.

Grading Evaluation Policy

All required work must be completed on time. Incomplete work will be reviewed at the discretion of individual faculty. Final grading is based on instructors' evaluation. Your success at transforming observations, questions, and interests into a cohesive proposition, and the progress made over the semester, completeness of assignments participation in discussions and demonstration of a reiterative and comprehensive working process are major components of your evaluation.

This is a fast-paced studio. Absences, excused or otherwise, will set students back and will be difficult to make up. Attendance and promptness to class are mandatory. Arrival to class more than 15 minutes after the beginning of class, missing a scheduled personal review, and/or leaving class early without approval will be considered an absence. If you anticipate being late or absent from class, send email acknowledgement to your faculty no less than 30-minutes prior to class. *Two* unexcused absences will result in automatic failure of the course. Incomplete grades may only be granted for health reasons or personal emergencies. It is your responsibility to immediately notify your instructors in such cases. Grounds for permanent dismissal from class: 2 or more unexcused absences anytime during semester; repeat tardiness; failure to honor academic policies or codes of conduct. No cellphone use in class.

Course Plan

WEEK	CLASS NO.	SESSOIN TYPE	SESSION CONTENT	PROJECT & NOTES
EMERGING				
			Emerging Phase Learning Outcome	• Independent research on the relationship between natural organisms and architectural structure; • Basic architectural drawing skills; • Strong verbal and graphic presentation skills;
PART 1 - BIOTIC & ANATOMIC THEME RESEARCH				
WK1	**1**	Introduction + Discussion + Lecture	• Course Introduction; • Group Activity "Declaration of Uniqueness" • Lecture #1 — the Research and Analysis of Natural Organisms - Form, Structure, Behavoir; • Nature Lab Visit Tour (TBD)	• Nature Lab equipment group training on Weekend with Benedict Gagliardi (Time TBD); • Project #1 - "The Creature" Assigned (Research on form/behavior/etc. Presentation, Group Discussion) • Email your final decision of your interests and focus to both instructors no later than two days after class @ 6pm.
	2	Lecture + Individual Desk Critique	• Guest Lecture #2 by Jennifer Bissonette (at Nature Lab/TBD) about Natural Science and Trans-disciplinary Design; Nature Lab Tour (TBD); • Work Session & Desk Critique	• Prepare to have conceptual sketches to show and discuss
		Individual Critique Question	• Describe the major finding and your interest from your research; • Discuss the potential development together with instructor	
WK2	**3**	Project #1 Review	• Project #1 Pin-up + Review	• Documentation of Project #1 due TBD • Project #2 Assigned — "The Basics 01" (plan, sections, elevation drawings)
	4	Workshop + Individual Desk Critique & Small Group Critique	• Workshop #2 - CNC, Wood Shop, Laser Cutting and 3D Printing Training Session @ BEB Basement with James Dean	• Prepare to have research evidence before desk critique
		Individual Critique Question	• Review the assignment criteria and highlight the key point; • Determine the scale of the drawing with individuals; • Discuss the potential focus with each student	
		Small Group Critique (assigned group)	3 or 2 people in a group, each person use 1 minutes to describe their drawings, and how they will graphically express the spatial quality. Each students will write 50 words reflection based on their group critique, for example, what are some new ideas, and concisely describe what's the unmet part and how they will improve their work (email instructors by the end of the class).	
WK3	**5**	Project #2 Review	• Project #2 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #2 due TBD • Project #3 — "The Series" (a series iteration of different states through Axon, Orthographic, Detail drawings)
	6	Desk Critique	• Work Session & Project #3 Desk Critique	• Prepare to have partial done for feedbacks
		Individual Critique Question	• Review the assignment criteria and highlight the key point; • Determine the scale of the drawing with individuals; • Discuss the potential focus with each student	

DEVELOPING				
			Developing Phase Learning Outcome	• Profound understanding of visualizing animated form; • Advanced 2D & 3D architectural drawing technique; • Diagrammatic and verbal presentation skills;
WK4	**7**	Project #3 Review	• Project #3 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #3 due TBD • Project #4 — “The Movement” (a/b/c)
	8	Desk Critique	• Work Session & Project #4 Desk Critique	• Prepare to have part a done for feedbacks
WK5	**9**	Desk Critique	• Work Session & Project #4 Desk Critique	• Prepare to have part b done for feedbacks
	10	Desk Critique	• Work Session & Project #4 Desk Critique	• Prepare to have part c done for feedbacks
WK6	**11**	Project #4 Review	• Project #4 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #4 due TBD • Project #5 — “The Translation”
	12	Desk Critique	• Work Session & Project #5 Desk Critique	• Prepare to have conceptual sketches/material ideas/options of model for feedbacks
WK7	**13**	Project #5 Review - Miterm Review	• Project #1-5 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #5 due TBD
PART 2: SYSTEMATIC AND ANIMATED ARCHITECTURE ANALYSIS				
	14	Lecture + Meeting + Desk Critique	• Course Introduction; • Group Activity ”Declaration of Uniqueness” • Lecture #2 — the Research and Analysis of Architecture Structure, Technology, Future; • Individual Project Building Assigned	• Project #6 — “The Building” (Plans, Sections, Axon, Details) • Research/Work Session • Optional Individual Meeting for performance/ grade update
ADVANCING				
			Advancing Phase Learning Outcome	• Profound understanding and thoughtful design approach in bio-inspired architecture; • Proficient physical modeling skills; • Professional 2D & 3D architectural representation skills; • Professional and effective presentation skills; • A final portfolio showcase the systematic and analytical design process throughout the semester
WK8	**15**	Individual Desk Critique	• Work Session & Project #6 Desk Critique	• Prepare to have accurate building drawings to show
	16	Group Desk Critique	• Work Session & Project #6 Desk Critique	• Prepare to have partial drawing done for feedbacks
WK9	**17**	Project #6 Review	• Project #6 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #6 due TBD • Project #7 — “The Performance” (structure focus)
	18	Individual Desk Critique	• Work Session & Project #7 Desk Critique	• Prepare to have partial drawing/sketches done for feedbacks
WK10	**19**	Project #7 Review	• Project #7 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #7 due TBD • Project #8 — “The Innovation” (endowing a new meaning/function to the existing structure)

	20	Individual Desk Critique & Small Group Idea Expansion	• Work Session & Project #8 Desk Critique	• Prepare to have ideas ready for discussing
WK11	**21**	Project #8 Review	• Project #8 Pin-up + Review (Guest Critic TBD)	• Documentation of Project #8 due TBD • Project #9 — “The Transplantation” (strategies to connect parts and make it work)
	22	Individual Desk Critique	• Work Session & Project #9 Desk Critique	• Prepare to have products ready for discussing
WK12	**23**	Walk-through Critique	• Work Session & Project #9 Desk Critique	• Prepare to partial drawings/models for discussing; • Set up a detailed working plan for this week as well as the plan during holiday
	24	Individual Desk Critique & Group Discussion	• Work Session & Project #9 Desk Critique	• Instructor will give feedback based on your plan and goal for final; • For each student will give a specific challenge
WK13	**25**	Holiday		
	26	Holiday		
WK14	**27**	Final Review	• Final Project Pin-up + Review (Guest Critic TBD)	• Project booklets due TBD • Individual meeting for academic or careers

Proposed Assignment

Project 01

Project Introduction

The first project consists of a series of four weekly progressive and interrelated assignments with a coherent theme; this includes a research presentation and various drawings created throughout the next 4 weeks. Students will identify their discoveries and illustrate their analysis through a series of lab research, readings, lectures and field trips. Student begin to identify their chosen theme within their own lab research and within the class's readings, lectures, and field trips. Come up with a concept and develop a systematic and logical understanding of a particular organism from the Nature Lab. The goal of this entire project is to understand and to represent the logic and theory behind a form or a phenomenon; to transform this concept into a theoretical system or a component of an architecture.

Project Goals (P01.1-P01.4)

① To identify a theme and conduct an in-depth research about selected organisms of different scales;
② To define students' interests and discoveries by descriptively dissecting the organisms, including form, internal/external structure, texture, behavioral movement, metabolism, etc.;
③ To demonstrate the "imagined motion" of the organism from the first assignment with successional iterations of different states of the organism;
④ To describe an animate quality of the iterations of movement imagine the steps of the organisms behavioral movement/structural mechanism/process of metabolism, etc., or even express how this "motion" is actively changed by its environment, whether it be a subjective sensor, an objective factor, or a particular force;
⑤ To convey three-dimensional concept by using architectural drawing techniques proficiently

Project Outcomes (100%):

- P01.1: 200-300 word description & 10 minute powerpoint presentation of the selected theme (15%)
- P01.2: Dissection set: two plans, two sections, two elevations (20%)
- P01.3: Five axon/isometric drawings that convey their iteration of the motion character (25%)
- P01.4: One set of drawings that show the animate quality of the organism, drawing from the dissection set (25%)
- Documentation and booklet of Project 01 (15%)

Basic Competency Qualities:

- Learning Attitude: positively work on each problem with confidence; fully-participate in each working session; working hard and push oneself out of one's comfort zone, and producing work that hit on the pursued theme;
- Written Description & Presentation: well-prepared, expressive of some creative concept, interesting topics captures
- Drawings: legible and clean on the right size of paper; adequately fulfills the quantitative requirements with basic drawing quality; effectively convey one's idea and exploration;
- Documentation: complete a project booklet with all works clearly and carefully photographed, organized, explained; the booklet should show design process as well as state the commitment of each concept concisely

Advanced Competency Qualities:

- Learning Attitude: continuously transform and advance the working process and produce consistently through the weeks of the project; raising and reiterating important and valuable questions and answering through drawing;
- Written Description & Presentation: fluent, cogent, informative and well-proofs with supplement; successful applies conceptual potential in inventive ways;
- Drawings: elaborately organized content on each paper; the precision of drawing as well as the inherent level of intelligence and techniques that carried intention;
- Documentation: design a project booklet with elaborated typography and thoughtful text written to enrich the understanding of each project; be creative!

Weekly Assignments Details

P01.1

Week 01 Work Description

The first assignment, "The Creature," is a research-based presentation that describes a discovery from collections of the Nature Lab. These collections include Tiny Town, Micropolis, Nearly Nanoville, Arthur Loeb Design Science Teaching Collection, and the Edna W. Lawrence Natural History Collection. The goal is to identify a theme and conduct in-depth research about selected organisms of different scales with this theme in mind. By examining and observing the selected specimens, students are expected to recognize a specific element/reaction/character of the "organism" from different types and scales of forms, from macroscopic to microscopic, from static to dynamic. The research progress should be illustrated through compelling logic with relevant collections of evidence, such as photos, microscopic screenshots, sketches, notes, analytical diagrams, short animations, soundtracks, etc.

Week 01 Work Requirements

- 200-300 words description of your research and identification of the organism
- Each student will present their weekly findings for 10 minutes
- Presentation PDF must be uploaded 30 minutes before review to the google drive
- Necessary materials (e.g. sketches, notes, diagrams, soundtracks, etc.) should be presented as supplementary to support the presentation

P01.2

Week 02 Work Description

The second assignment, "The Basics," is to reflect students' interests and discoveries by descriptively dissecting the organisms, including form, internal/external structure, texture, behavioral movement, metabolism, etc. Through a set of precise and measured orthographic projection drawings (plan, sections, and elevations), students would be expected to convey the depth and hierarchy through the elaborated use of line weights.

Week 02 Work Requirements

- Two plans, two sections, two elevations, all at the same scale
- Drawings for the organisms should layout on a 10"×10" Stonehenge paper and well-fitted for observing enough details
- One drawing on one paper, a total of six papers, at least

P01.3

Week 03 Work Description

The third assignment, "The Series," is to demonstrate the motional character from the first assignment with successional iterations of different states of the organism. Through a series of iterations of movement status, students will reveal more aspects of the motional character in axonometric/isometric perspective of their selected organisms. These drawings should be precisely measured and clearly described the cyclic, periodic, gradient, linear, or any other types of movement. Before creating the drawing, think about what is stable and what is unstable? What qualities of movement are present? Is there a component or components that allow the measurement of this animation? How does the organism interact with itself, or others, or the space it occupies? What factors may affect the movement? How to breakdown these movements through different iterations that can reveal the movement thoroughly?

Week 03 Work Requirements

- Produce at least five axon/isometric drawings as iterations that are clearly explicit the motion character of certain organism
- Drawings should be well-organized on a 18"×18" Stonehenge paper and precisely drafted that allows detail observation within 3 feet distance;
- One drawing on one paper, a total of five papers, at least
- Line weight and line hierarchy should be thoughtfully considered and well-applied to highlight reasonable emphasis that should be readable on each drawing.

P01.4

Week 04 Work Description

The fourth assignment, "The Movement," is a reflection from all the previous works, advance them, through re-drawing, in layers, to describe an animate quality of the iterations of movement. Drawings could imagine the steps of the organisms behavioral movement/structural mechanism/process of metabolism, etc., or even express how this "motion" is actively changed by a subjective sensor, an objective factor, or a particular force, for example, the predator, the gravity, the wind, the buoyancy, the sunlight, etc. The goal of this exercise is to critically evaluate and thoughtfully explicit the logic behind the "motion."

Week 04 Work Requirements

- Be creative; line weight is still crucial; colors may apply;
- One set of drawing on one paper no smaller than 18" x 24"; multiple layers of paper or single paper with multiple layers of drawing should be decided accordingly

Project 01 Conclusion

Through the observation and imagination in two-dimensional and three-dimensional drawings, the goal of these assignments is to realize that "architectural drawings" also take on a life of their own; each drawing is selective in what information it reveals and what information it conceals and is by definition subjective. The descriptive and the creative of these drawings vocalized the theory of movements of organisms that are not readily apparent in our daily life, and the "anatomical" drawings like x-rays that offer designers insight into the endlessly complicated spaces we live in. Therefore, the way that architects understand anatomical process has a bias and an attitude; the aesthetic concept derives from the science, but it is more than just communicate measure data. These attitudes embedded in the inanimate drawing give it life, allowing the designer to use them not only as descriptive devices but as tools of creation to explore spacial quality, capacity, and possibilities that are embedded within an organisms' character.

Reading, Material, Resources

- The collections at RISD Nature Lab include *Tiny Town, Micropolis, Nearly Nanoville, Arthur Loeb Design Science Teaching Collection,* and the *Edna W. Lawrence Natural History Collection*.
- Required equipment: To conduct work in this course, students will need a laptop computer running a recent Mac or Windows OS. Students should bring their laptop to class every session.
- Programming languages and required software: Programming will be taught predominantly in Processing, but will also include shallower dives into Arduino, JavaScript, and other computational tools.
- No textbook required. Weekly readings will be assigned accordingly (to be announced).
- Additional materials will be available in Google Drive or RISD Digication.
-

Bibliography

- Bergdoll, Barry, Dario Gamboni, and Philip Ursprung. *Nature Design: From Inspiration to Innovation,* edited by Museum für Gestaltung Zürich, Angeli Sachs. Lars Müller Publishers, 2007.
- Colomina, Beatriz, *X-Ray Architecture*, Lars Müller Publishers, 2019.
- Daston, Lorraine J., and Peter Galison. *Objectivity*. New York, Zone Books, 2007.
- Ingold, Tim. *Making: Anthropology, Archaeology, Art and Architecture*. Routledge, 2013.
- Jasen, Theo. *The Great Pretender.* 2nd ed., Rotterdam, 010 Publishers, 2009.
- Lewis, Paul, Marc Tsutumaki, and David J. Lewis. *Manual of Section*. Chronicle Books, 2016.

Selected Architecture

Continue being updated…

- Yale Art & Architecture, New Haven (Paul Rudolph, 1959-63)
- Bank of London, Buenos Aires (Clorindo Testa & SEPRA, 1959-66)
- Villa Shodhan, Ahmedabad, India, (Le Corbusier, 1951)
- Santa Maria Church de Canaveses, (Álvaro Siza Vieira, 1996)
- Phillips Exeter Library, New Hampshire, (Louis Kahn, 1972)
- Engineering Building at Leicester University (Stirling and Gowan, 1963)
- Asilo Sant'Elia, Como, Italy, (Giuseppe Terragni, 1936-1937)
- St. Mark's Church in Bjorkhagen, Sweden (Sigurd Lewerentz, 1960)
- Bordeaux House, Bordeaux (OMA, 1998)
- MAXXI Museum, Rome (Zaha Hadid, 2009)

Academic Policies and Codes of Conduct

Please refer to the following documents for information regarding grading, academic integrity, policy and procedures:

- RISD Academic Code of Conduct http://www.risd.edu/Policies/Academic/
- RISD Policies and Code of Student Conduct http://www.risd.edu/Students/Policies/
- Policies as detailed in the RISD course announcement: http://departments.risd.edu/registrar/web/index.html
- An Installation Site Permit is required for any projects that require the use of non-classroom space or that could potentially pose a safety risk. A form is available here with further details: http://info.risd.edu/environmental-health-safety/
- Projects may not pose hazards that threaten or cause physical harm to yourself or others.
- Projects may not cause damage to studio, shop, and lab equipment or school facilities.
- We will expect and maintain behavior in class that establishes and preserves an atmosphere appropriate for teaching and learning.

Disability Statement

Disability support | Disability Support Services (DSS) assists RISD students who have either cognitive (learning) or physical disabilities. If you believe that you have a physical or cognitive disability that may impact your academic standing and requires an accommodation, please see this link for more information: http://www.risd.edu/Students/Wellness/Disability_Support/

Pre- And Co-Requisites

This course is open to Freshman, Sophomore, Junior, Senior, and Grad from all majors. No prerequisite for this course.

Shop Policies

BEB Digital Fabrication: https://info.risd.edu/beb-digital-fabrication/#beb-digital-fabrication
RISD Nature Lab Training: https://naturelab.risd.edu/equipment/

Critique Statement

Critiquing is a crucial and essential part of learning in an architecture class. It provides a great opportunity to see your own strengths and share with others peers and the instructor your understanding of knowledge, and experiences, to enable yourself to see various options or to identify the flaw in the reasoning or design. In general, the argumentative topics will be weaving into each weekly critique session, and the main topics will include:

- In-depth Research
- Concept/theme development
- Interdisciplinary design strategies
- Practical/feasible constructive solutions
- Production and documentation
- Presentation & modeling skills
- Field/career exploration (optional)

The critiquing strategy will be applied differently at different stages of the project, or different phases of our course. Clarity is the essential goal throughout the framework of the critique. Before we start a project, students will fully understand the requirements and criteria for the project from reading the assignment brief. We will be discussing the assignment together before we start. Students are expected to ask questions and we will then initiate a brainstorming discussion together or individually. This will help to confirm that you understand those key points before the project start. During the discourse, you will be encouraged to express your understanding of the goals and also be expected to hear your opinions about what are your next steps. And the purpose and requirement of a project will be reviewed and reiterated as a way of clarification to smoothly trigger the next steps by yourself.

The effective way of working on a large project will be dissected into small components. This is what I am usually working on a task, so the same strategy I would ask for students. As you begin to work on your process, focusing on several related peripheral topics will help you to get inspirations within a broader scope, and simultaneously, the process will be less overwhelming and more reflecting. In architecture and landscape architecture design, usually, there are many debates or discourse, variables, or factors to thoughtfully analyze in a project, which is the analytical research phase. And the result of it will lead to the schematic design process and concept development. Therefore, the breaking down process will be taught and discussed with you before you start the project. Manipulating multiple components and aspects would be practical to digest the information but also would be reasonable to convince others your design intentions or decisions through a series of approaches. For example, in the course "*A Contrastive Anatomy by Architects*," the first project consists of a series of four weekly progressive and interrelated assignments with a coherent theme. This process creates a weekly rhythm and allows enough time for students to work on each stage of a large project progressively and effectively.

During the analytical research phase, each of you will be asked to find relevant information to their "project components." You will work with instructor to come up with your specific interest in this phase. So during the individual desk critique, you will be encouraged to outline the components and draft a "system" diagram to show the relationship among these components that could lead you to achieve your final approach. The way to get familiar and specific, and to generate a strong argument from the research will gradually form your synthesized concept for the big project. These components are the trails of the projects, for example, in my course "*Architecture as Micro-biosystem*," students need to extensively and inter-disciplinarily study nature organisms' structure, or behavior, etc., and use that research to design components' performance). You will receive feedbacks at critical stages in the project from me, and I would also encourage you to work and discuss your work among peers to get feedback from others, so all of you will keep the jobs on track.

As we move to the next step, students will begin with the first design phase that conceptualizes the schematic design. With all the understanding of your research, you will work with me to specify your path and push it forward to realize your final goal. You will also ask for assistance from me in crystalizing which parts of your concept can be emphasized more and which sections are not meet the project criteria. To be more specific, you will be asked a series of research questions as a guide to see and consider some critical factors or elements to achieve the ultimate design purpose. So after each conversation/session with me, as a clarification, I will conclude with a summary of key aspects of your initial concept that would be either improved by your later reconsideration and revision.

Moving forward from conceptualization to the design phase usually requires thoughtful understanding and reflection from previous research. Within this design development phase, we will brainstorm together to see further design possibilities by using the actual demands or evidence from the previous study. In this process, patience is essential. You will be reviewed with me of your current process and gain useful feedback — by showing and explaining your ongoing work, you will evaluate your work with me to compare with the list of components your have created. Each of you will be encouraged to ask questions on your own as much as possible. From reiterating this question, you are expected to produce the improvement to ask these questions. Still, for confused students, you will certainly welcome to ask for help from me. Through your own description of your work, we will find potential approaches together by reviewing your concept, the design demands, goals, and/or alternatives.

Fulfillment of assignment is more important to me — usually, at the final design stages, no significant concept changes should happen, so completion is the primary requirement to all of you, and I would push you towards production once the other considerable steps have been done. Before the final critiques come, I will let you understand the logistics and format that will be expected in our final review, so you can prepare your presentation and focus in advance.

As a conclusion, I think the critique is an interactive linkage between you and me. It is also an opportunity for you to explain you thinking, concept, process, approaches, and improvements. You will learn from me or other academic professionals, but most of the time, you also learn from your peers throughout the semester. As you present their projects, you reflect from your design and learning process from doing research, generating concepts, solving problems. Since each of you will be expected to improve after each critique, I will remind the criteria used to evaluate your work during our individual review. For example, some question I would ask you, such as, “Now when you are working on analytical/anatomical drawing, remember that your project will be evaluated for the quality of the conceptual information, the clarity of your structure details, and the hierarchy of your line weight.” During the design development phase, you will receive an extensive feedback for a future insight in general. Thus, I will be authentic to your performance and provide you specific suggestions that will effectively encourage your further creativity and constructive improvement.

Mid-semester Feedback

Course title

Your Name: _____ (optional)
Your Major: _____ (preferred)

Course Goals

- To develop a rigorous research and design practice individually and collaboratively
- To cognize natural performance in the architectural design field more profoundly;
- To engage and understand architectural techniques and capacities of describing three-dimensional forms in space through two-dimensional drawings;
- To originate new effective possibilities of structure from the composition or behaviors of organisms;
- To compare and contrast the demands and tectonics between architecture and natural organisms;
- To evaluate the feasibility of innovative concepts and provide corresponding solutions.

Instructor Review

Please rate the following course objectives on a scale of 1 to 5 (5=strongly agree, 1=strongly disagree).
In this course, your instructor, _____

is well prepared for class	1	2	3	4	5
demonstrate through knowledge of subject	1	2	3	4	5
clearly communicate the work expectation	1	2	3	4	5
provide insightful/helpful comments	1	2	3	4	5
encourage and lead class discussions	1	2	3	4	5
consider students' improvement	1	2	3	4	5
is friendly and approachable	1	2	3	4	5
is overall helpful teacher	1	2	3	4	5

Overall Course Review

Please write your response under each questions.
What do you like most about this course? What would you like more of in this course?

Is there anything about the structure of the course that could be adapted to help your learning? (e.g. do the critique as a whole class/small groups/individual meetings).

What can the instructor do differently to help you learn more/better in this course?

Do you come prepared for every class (e.g. do the readings; finish the assignments)? Why or why not?

Are the assignments clear? Do you feel you are assessed fairly for you work?

Now it's halfway through, is the course what you expected it to be? Why or why not?

Would you recommend this course (or this instructor) to another student in the future? Why or why not?

Any other comments?