



San Jose State University
Department of Design // Interior Design Program

dsIT 103 | Spring 2022
Generative Systems
Interior Design Studio

Instructor: Marziah Zad
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Class Duration: **January 26 - May 16**
Mon. & Wed. | 08:00 - 10:50 PST *

Office Hours: Tuesdays 11:00 - 12:00 / or by appointment.

** Due to online format some coursework will be asynchronous*

Course Description:

Digital tools and design techniques are now an integral aspect of any design process. This studio course will focus on how ideation and design development should be handled through a generative framework. The objective is to disentangle the process through focusing on pattern and pattern deformation as a baseline generative factor, while integrating digital tools and iterative practices to aid students in understanding generative techniques and the associative process of design.

Students will design modular, 3D printed tiles in an explorative process of tessellation. Through this process, students will better understand the creative reciprocity between part and whole, as well as top-down and bottom-up feedback loops. By 3D printing tile components, this studio will incorporate necessary skills building in craftsmanship, joinery systems and fabrication details, while simultaneously exploring digital fabrication solutions.

Students will use a generative framework developed in the first quarter of the studio to design objects and enclosures for the Standard Hotel in Los Angeles. In parallel with technical skills, students will study spatial programming systems and evaluate how design impacts spatial dynamics and placemaking.

Course Intent:

Use the synthetic intelligence of patterns as a unifying factor between design logic, aesthetics and application to design interior spaces. Explore and develop form generation strategies and design applications using patterns as a synthesizer between formal composition and performance factors.

Course Objectives:

Students completing the studio are expected to achieve the following:

- Awareness of an alternative approach to design that incorporates aesthetic and organizational complexity with the patterning ability to integrate multiple design factors without separating design from materialization processes.
- Understanding how design decisions impact spatial identity and placemaking. Studying and interpreting behavioral patterns and anthropometric data to make appropriate design decisions related to spatial performance and program.

- An ability to develop a generative system and technical language that can be applied in the context of an interior design project in a cohesive and logical way.
- Control a geometric framework to respond to significant design and program criteria as it relates to complexities of human experience within the built environment.

Learning Methodology:

This is an investigative design studio which encourages students to challenge their conceptions of interior and spatial design processes through using specific digital design techniques and a generative framework. Students will develop robust technical skills while learning strategies for employing digital tools and digital design techniques during the design process. Students will learn how to translate issues and criteria that are important to them into a design language that can be controlled and communicated through digital design systems. There will be regular digital presentations from students with critical input and lectures from the instructor. Design reviews, group discussions and critiques will be conducted during most sessions. Lectures and seminars by visiting specialists, public review of projects.

Course Phases and Structure:

This is an investigative studio which will focus on the exploration of patterning and pattern deformation as a generative tool in the design process. The studio is comprised of four phases:

Phase I [Exploration and Skills Building]: In this phase, digital design tools will be employed towards pattern formation and geometric organization. Students will initially explore 2D and 3D modeling techniques using a pattern framework while indexing and categorizing object and spatial results for later use. The result of this phase is a catalog of pattern systems, tessellations studies, as well as a foundational geometric vocabulary to guide design. *This phase will conclude with presentations of tile designs on February 14.*

Phase II [Design Framework]: This phase focuses on the adaptation of a geometric language to create enclosures and interior design elements such as furniture and lighting pieces. Students will use the geometric vocabulary developed in the previous phase to respond to programmatic criteria and spatial functions. *This phase will conclude with presentations of a cafe design within the Standard Hotel Lobby on March 09.*

Phase III [Interior Design Application]: This phase focuses on a physical context and program of an interior design space. Students will employ the form generation techniques they have learned to respond to formal, spatial and functional issues within relative scales. The result of this phase is a conceptual interior design project based on systematic logic and integrative design ideas. *The schematic design phase will conclude on April 13.*

Phase IV [Design Communication]: This phase focuses on design development, material choices, orthographic drawings and design communication. *This phase will conclude with final review presentations on May 16.*



Ana Vargas and Yvette Morales - Spatial Patterns Fall 2020

Class Resources:

For this course I have set up a structure of tutorials, lecture presentations and design reviews conducted by myself and external experts, in order to provide information, technical skills and knowledge you will need for the course directly through our class sessions.

I will also upload examples, documents, presentations and other resources to the 'Files' folder on Canvas, to support particular assignments or discussions for you to review. I will inform you whenever I add something to this folder. I also encourage you to share interesting resources you find with the rest of the class, by posting them to the folder called 'Peer Shared Resources'.

For more specific resources targeted to your particular interests, please reach out to me at any time to discuss. I will post all resources we discuss together during class onto the drive for all students to access.

Further Literature and References:

- Mark Garcia, et al. Editorial. Patterns of Architecture. Architectural Design, Vol 79. No 6. November 2009.
- Mark and Jane Burry. The New Mathematics of Architecture. Thames and Hudson Publishers, April 1, 2012.
- Printing Architecture, Innovative Recipes for 3D Printing by Ronald Rael and Virginia San Fratello
- Printing Things: Visions and Essentials for 3D Printing by Dries Verbruggen and Claire Warner

Technical Requirements:

Log into Canvas using the login URL: <https://sjsu.instructure.com> and your SJSU 9-digit ID to access our class. If you have questions about accessing and using Canvas, visit the Canvas support page. Canvas and Technology Support also is available by email at ecampus@sjsu.edu.

We will also be using Miro to share content and assignment submissions, Excel for team organization and informal course review sign ups, Google slides for presentations, and Zoom for class meetings. **All significant information regarding the course and assignments can be found in this syllabus. Canvas is a support interface to facilitate tasks only.**

If you have particular Internet access challenges please inform me by sending an email to marziah.zad@iaac.net. I will discuss your learning techniques and habits with you via appointment.

You will need a laptop that is powerful enough and meets the minimum requirements to run the appropriate software for this class.

Software Requirements:

- Rhino 7
- Rendering plugins for Rhino, such as Endscape, VRay, Corona, etc. Note: Rendering skills will not be covered in this course, but are expected for design communication.
- Photoshop / Adobe Illustrator / Indesign [Adobe Creative Suite is available to SJSU students]
- Google Slides
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You must have Rhino 7 installed by the second session of class. You may purchase an academic version or download the 90 days trial of Rhino 7 online at: <https://www.rhino3d.com/download/rhino-for-windows/6/evaluation>

If you have challenges finding or installing software please let me know.

You have to provide the materials for your own projects based on your design and fabrication approach, and as required for assignments. General tools and materials such as glues and cutting knives are not listed here. You will be casting a tile from a 3D printed mold which requires casting materials such as rockite, plaster, resins and silicone. We will discuss these materials and purchase methods in class.

Class Schedule

Week	Date	Class Schedule
Phase I - Exploration // TILE DESIGN ; DESIGN COMMUNICATION		
1	January 26	<ul style="list-style-type: none"> - Introductions - Course and syllabus overview - Workflow presentation - Teamwork structure - <i>Assignment 01 Pattern Creation and Catalog</i>
2	January 31	<ul style="list-style-type: none"> - Feedback for <i>Assignment 01</i> - Rhino Tutorial for drafting a plan and section - <i>Assignment 02 Design Communication</i>
	February 02	<ul style="list-style-type: none"> - Feedback for <i>Assignment 01 & 02</i> - Illustrator tutorial: Graphic communication of a plan and section
3	February 07	<ul style="list-style-type: none"> - Submission review <i>Assignment 01 & 02</i> - <i>Assignment 03 Tile Design</i>
	February 09	<ul style="list-style-type: none"> - Feedback for <i>Assignment 03</i> - Documentation of geometry system, control factors and tessellation
4	February 14	<ul style="list-style-type: none"> - Feedback for <i>Assignment 03</i> - Tutorial for 3D printing preparation - Documentation of geometry system, control factors and tessellation
	February 16	<ul style="list-style-type: none"> - Submission review <i>Assignment 03</i> - Review tile design files before printing - Discussion: What is a Design Framework? - <i>Assignment 04 Design Framework</i>
Phase II - Implementation // DEVELOPING A DESIGN FRAMEWORK + MIDTERM		
5	February 21	<ul style="list-style-type: none"> - Feedback for <i>Assignment 04</i> - Tiles sent to print
	February 23	<ul style="list-style-type: none"> - Feedback for <i>Assignment 04</i> - Object design exercise - Interior Elements
6	February 28	<ul style="list-style-type: none"> - Feedback for <i>Assignment 04</i> - Tile casting - Spatial programming exercise - Hospitality - Midterm Requirements
	March 02	<ul style="list-style-type: none"> - Feedback for <i>Assignment 04</i> - Tile casting - Discussion: Presentation techniques
7	March 07	<ul style="list-style-type: none"> - Pre-review preparation - Design communication
	March 09	[Proof of Concept] Midterm Presentations // Cafe
Phase III - Design Proposal // SCHEMATIC DESIGN PROPOSAL		
8	March 14	<ul style="list-style-type: none"> - Team restructuring option - Discussion: Social Impact of Spatial Programming - <i>Assignment 05 Standard Design</i>

	March 16	<ul style="list-style-type: none"> - Feedback for <i>Assignment 05</i> - Mood board and material study exercise
9	March 21	<ul style="list-style-type: none"> - Feedback for <i>Assignment 05</i> - Diagramming and Concept Introduction workshop
	March 23	<ul style="list-style-type: none"> - Feedback for <i>Assignment 05</i> - Diagramming and Concept Introduction workshop - Spring break exercise
Spring Break March 28 - April 01		
10	April 04	<ul style="list-style-type: none"> - Feedback for <i>Assignment 05</i> - Midterm review requirements - Discussion: Presentation techniques
	April 06	<ul style="list-style-type: none"> - Feedback for <i>Assignment 05</i>
11	April 11	<ul style="list-style-type: none"> - Pre-review preparation and presentations
	April 13	[Schematic Design] Midterm Presentations // The Standard
Phase IV - Design Development: ORTHOGRAPHIC DRAWINGS AND PRESENTATION		
12	April 18	<ul style="list-style-type: none"> - <i>Assignment 06 Design Development & Communication</i> - Revisit orthographic drawings
	April 20	<ul style="list-style-type: none"> - Feedback and critiques
13	April 25	<ul style="list-style-type: none"> - Feedback and critiques
	April 27	<ul style="list-style-type: none"> - Feedback and critiques - Final Review Requirements
14	May 02	<ul style="list-style-type: none"> - Working day. Presentation guidance.
	May 04	<ul style="list-style-type: none"> - Working day. Presentation guidance.
15	May 09	<ul style="list-style-type: none"> - Working day. Presentation guidance.
	May 13	<ul style="list-style-type: none"> - Working day. Presentation guidance.
16	May 16	FINAL REVIEW PRESENTATIONS

Accessibility and Special Needs:

San Jose State University is working towards creating inclusive remote learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation, or if you anticipate special needs due to the unique format. You are also encouraged to find more information through the Accessible Education Center at <https://www.sjsu.edu/aec/students/accommodations/>

If you need course adaptations or accommodations because of a disability, please make an appointment with me as soon as possible. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

Discussion and Engagement Guidelines for Remote Participation:

Participate and Contribute: Students are expected to participate by sharing ideas and contributing to the collective learning environment. This entails preparing, following instructions, and engaging respectfully and thoughtfully with others. More specific participation guidelines and criteria for contributions will be provided for each specific activity.

NOTE that University policy F69-24 at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to ensure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Requirements and Evaluation:

The course is organized around lectures, tutorials and design work: lectures will introduce topics and assignments and provide an overview of issues and outline the design principles and communication concepts that are expected to be investigated. Design work will be sessions focused on the exploration of design issues and communication skills. Finished projects and work in progress will be presented and discussed during most class sessions to make important points about design.

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf](http://www.sjsu.edu/senate/docs/S12-3.pdf).

Your final grade for this class will be based primarily on class participation in reviews, creative efforts, illustration of design growth throughout the semester, and the successful completion of assignments. The assignment grade will be based on a set of criteria including the thoughtfulness and originality of the concept, rigorous and iterative experimentation, the application of the design principles you have learned, and the time and care you have invested in making models, final objects, renderings and presentations.

Breakdown: 100 %

Assignment 1: 5%

Assignment 2: 5%

Assignment 3: 10%

Assignment 4: 20%

Assignment 5: 30%

Assignment 6: 15%

Class Participation: 15%

Class Participation will be based on preparedness for in-class desk critiques and pin ups and your role in the group project.

Grading Percentage Breakdown

97-100 = A+

93-96 = A

90-92 = A-

87-89 = B+

83-86 = B

80-82 = B-

77-79 = C+

73-76 = C

70-72 = C-

67-69 = D+

63-66 = D

60-62 = D-

59 and below = F

A. Excellent. Indicates work of a very high character; the highest grade given. This grade is reserved for work that shows leadership and inspiration, demonstrating significant insight developed to its fullest extent and presented with exquisite craftsmanship.

B. Good. Indicates work that is definitely above average, though not of the highest quality. This work shows thorough exploration and development, and is well presented with good craftsmanship, but it may not rise to the highest level of excellence.

C. Fair. Indicates work of average or medium character. Work in this category demonstrates complete fulfillment of the stated requirements and an understanding of the issues covered, but does not exceed the expectations of understanding, development, or execution.

D. Pass. Indicate work below average and unsatisfactory. The lowest passing grade. Though work may meet the minimum requirements, it lacks depth, development or is unsatisfactorily crafted.

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F. Fail. Indicates work that the student knows so little of the subject that it must be repeated in order that credit may be received. Work in this category may be unfinished, unimaginative, underdeveloped or poorly executed, and shows minimal understanding of issues.

Classroom Protocol and Attendance Policy:

As the university community adjusts to teaching and learning remotely in the context of the COVID-19 pandemic, course requirements, deadlines, and grading percentages are subject to change. I will be mindful of the many impacts the unfolding events related to COVID-19 may be having on you. Although attendance and participation is an integral aspect of course completion, I have developed and posted to Canvas all assignments and exercises for you to review and complete if you cannot attend the class. I will record key tutorials and lectures for you to view later. During this unusual time, I encourage you to talk with me about what you are experiencing so we can work together to help you succeed in this course. As connecting through virtual platforms is tiring and pressureful, I have tried to reduce the amount of time that you must be actively connected. Taking into account all of these considerations, it is important for me to understand why you are missing a class session at any given time. Attendance is expected at all class sessions and the student's presence through synchronous sessions is required, but for asynchronous sessions it is only suggested/encouraged.

Barring a specific need for adjustment, assignment deadlines are clearly listed in assignments and on the Canvas calendar. Any work not turned in on the due date is considered late. Ten percent will be deducted from the grade for every class period it is not turned in. Special circumstances will be taken into consideration (e.g. Illness, court appearance, death of a relative.) All assignments must be completed and turned in to receive a passing grade for the class.

The instructor reserves the right to alter assignments and change project due dates with sufficient notice to the students.

University Policies:

Dropping and Adding Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's Catalog Policies section at

<http://info.sjsu.edu/static/catalog/policies.html>.

Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars. The Late Drop Policy is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>.

Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the Advising Hub at <http://www.sjsu.edu/advising/>.

Academic integrity:

Your commitment, as a student, to learning, is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic coursework. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at <http://www.sjsu.edu/studentconduct>.

Accommodation to Students' Religious Holidays:

San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See University Policy S14-7 at <http://www.sjsu.edu/senate/docs/S14-7.pdf>.

Internet etiquette: Please try to follow these helpful tips: identify yourself with your real name and use a subject line that clearly relates to your contribution. Write or speak in the first person when sharing your opinions and ideas but when addressing other students or discussing their ideas, use their names (e.g. "I think red is the most important term in the poem, but I also think Kate is correct that blue is important, too"). Respect the privacy of your classmates and what they share in class. Understand that we may disagree and that exposure to other people's opinions is part of the learning experience. It is also helpful to use humor or sarcasm carefully, remembering that non-verbal cues (such as facial expressions) are not always possible or clear in a remote context. In addition, your language should be free of profanity,

appropriate for an academic context, and exhibit interest in and courtesy for others' contributions. Be aware that typing in all capital letters indicates shouting. Certain breaches can be considered disruptive behavior.

Interact Professionally: Our learning environment provides an opportunity to practice being professional and rigorous in our contributions. Use discussions and activities as opportunities to practice the quality of work expected for assignments. Moreover, seize the chance to learn from others and develop your interpersonal skills, such as mindful listening and awareness of one's own tendencies (e.g. Do I contribute too much? Too little?).

Expect and Respect Diversity: All classes at the University of Oregon welcome and respect diverse experiences, perspectives, and approaches. What is not welcome are behaviors or contributions that undermine, demean, or marginalize others based on race, ethnicity, gender, sex, age, sexual orientation, religion, ability, or socioeconomic status. We will value differences and communicate disagreements with respect. We may establish more specific guidelines and protocols to ensure inclusion and equity for all members of our learning community.

Help Everyone Learn: Our goal is to learn together by learning from one another. As we move forward learning during this challenging time, it is important that we work together and build on our strengths. Not everyone is savvy in remote learning, including your instructor, and this means we need to be patient with each other, identify ways we can assist others, and be open-minded to receiving help and advice from others. No one should hesitate to contact me to ask for assistance or offer suggestions that might help us learn better.

Helpful guidelines for best practices using Canvas Discussion:

1. Use subject lines that clearly communicate the content of your post
2. Write clearly and concisely and be aware that humor or sarcasm often doesn't always translate in an online environment.
3. Be supportive and considerate when replying to others' posts. This means avoiding use of jargon or inappropriate language, and it means disagreeing with respect and providing clear rationale or evidence to support your different view.
4. Keep focused on the topic and reference readings and other class materials to support your points (as applicable).
5. Try to use correct spelling and grammar and proofread your submissions. After submitting, use the edit feature to make corrections and resubmit (don't create a new or duplicate post that corrects your error).
6. Contribute and interact often!

Helpful guidelines for best practices using Zoom:

1. Please test your video and audio prior to joining a live class session. You can learn more about testing your audio and video by visiting the UO Service Portal.
2. Try to be on time when the meeting starts. It can be distracting to have participants join late.

3. All of us occasionally need to hide video, but know that seeing your faces is a joy to me and, I believe, enriches our ways of relating—when you can, I value video on.
4. That said, please be mindful that others can see you and your surroundings if your video is on. Try to find a quiet setting without lots of noise or busy activities in the background. Please minimize distractions like eating or multitasking.
5. Use a microphone or speak closely to your computer microphone so that others can hear you. If you have video on, try to look at your camera, not the screen, when you are contributing.
6. Mute your audio when you are not actively contributing. When contributing, avoid making other noises such as typing or eating or having side conversations with others that might be present with you.
7. Use chat to pose questions or offer insights “on the side” while others are contributing. The chat can be read by all and should reflect a high standard of respect for our class community.
8. For help and troubleshooting with Zoom, visit the UO Service Portal.

Consent for Recording of Class and Public Sharing of Instructor Material:

- Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.
- Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.
- The instructor will record lecture sessions, Q&A sessions with experts and tutorial sessions for ease of learning and reference.



About the Instructor

Marziah Zad is an architectural designer with professional experience in Iran, Lebanon, Spain, and West Coast USA. Working with digital tools and advanced technologies, she is interested in how design impacts environments and the local to global sense of culture and identity.

Marziah is part of a Global Justice Research Collaborative, researching lightweight structures in adaptable refugee housing structures.

She is faculty of architecture, teaching at IAAC's Valldaura Labs Campus in Barcelona, Spain, the University of Oregon, and San Jose State University in the USA.

She currently lives between Barcelona and Tehran.

[ASSIGNMENT 01] Pattern Creation

January 26, 2022

Work individually or in groups of 2.

Due: February 07, 2022

Assignment Objectives:

- Identify and develop 2 dimensional patterns which have a strong geometric basis and potential for later spatial (3 dimensional) development.
- Understand and differentiate the underlying geometries which define pattern quality, pattern generation systems, controls and factors which create pattern variations or pattern deformation.

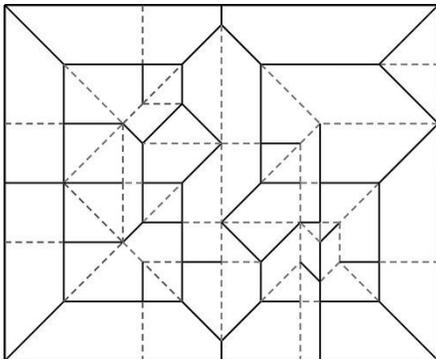
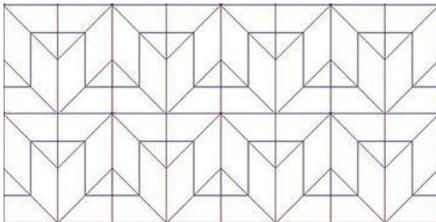
Step 1. Generate patterns

Design new, or recreate 10 existing patterns within a 3" x 3" frame. These patterns should be digitally designed in Rhino. However, you can use Illustrator briefly, until you develop the technical skills required to develop your work in Rhino. Moving forward you will use Rhino, and Grasshopper to design adaptable patterns of greater complexity. To start, you can use patterns you find online as initial inspiration, or even directly recreate patterns which you find interesting or which you believe to have further design potential. There are no constraints on base geometries, complexity or themes. Organic patterns, highly complex patterns of varying overlapping geometries (such as patterns of Islamic art), cultural patterns (such as celtic or japanese patterns), or even very simplified geometric patterns (such as variations of the miura ori pattern) are all appropriate. However, patterns must be drawn as simple black lines on a white background. Lineweights may vary but no solid-fill or color patterning is allowed.

Step 2. Observations and Analysis

- Choose 3-4 patterns which you find more inspiring.
- Identify and document base geometries from which the patterns are derived.
- Diagram the generative system for each of the patterns, or in other words, write the recipe which can recreate the pattern.
- Document the specific factors which control the pattern, such as dimensions, proportions, relationship between geometries, size, etc.

Below Left: *Variations of the Miura Ori* Below Right: *'Recipe for Tiling.'* from the pamphlet *architecture 27* book *'Tooling'* by Benjamin Aranda and Chris Lasch with geometric control system.



Recipe for Tiling

1. Take a set of points.
2. Construct a bisector between one point and all the others.*
3. The voronoi† cell is bounded by the intersection of these bisectors.‡
4. Repeat for each point in the set.

* The bisector is halfway between two points at an angle perpendicular to a line that would connect the two points.
 † Voronoi diagrams are of a class of patterns called Dirichlet tessellations, irregular tessellations of the plane that occur spontaneously in nature at every scale and are used in the study of many fields including biology, anthropology, computer science, marketing, and the growth of crystal line structures—problems that involve opportunistic occupancy of space.
 ‡ Any intersection found to be on the far side of a bisecting line is ignored.

[ASSIGNMENT 02] Design Communication in Rhino

January 31, 2022

Work individually or in groups of 2.

Due: February 07, 2022

Assignment Objectives:

- Practice drafting techniques and generation of orthographic drawings in Rhino.
- Skills building for design graphics and communication

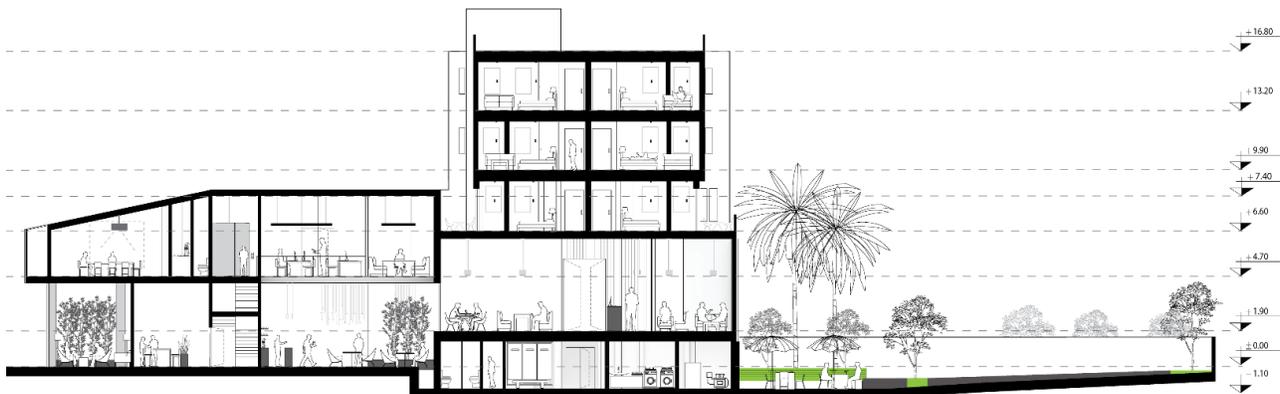
Create a 2D Drawing in Rhino

Based on the in-class tutorial related to drafting strategies in Rhino, create 2D drawings of a plan and section related to the cafe space in the Standard Hotel Model. Using techniques learned in class, apply hatches for wall poches and structures, add entourage elements such as biophilia, furniture and people to create a sense of spatial function.

Apply Pattern to Spaces

Based on the spatial functions generated in the plan and section, adapt your pattern of choice to surfaces within the space to reflect floor or wall tiling. Using techniques learned in class, export your drawings from Rhino to Illustrator and edit colors, lineweights and other graphics to better represent your concept ideas for the space.

You will present the results of this assignment in a digital presentation on Miro.



Example of section drafted in Rhino with adjusted graphics in Illustrator. Drafted by Nava Kholoosi for the office of Ashrafi & Zad.

[ASSIGNMENT 03] Pattern Catalog and Tile Design

February 07, 2022

Work in groups of 2.

Due Dates:

February 16, 2022 Digital Design // March 09, 2022 for Fabricated Pieces

Assignment Objectives:

- Create a library/catalog of a 2 dimensional pattern family. The variations within a pattern family will be used to later respond to varying design criteria.
- Understand strategies of pattern generation, deformation, correlation and control.
- Practice critical analysis and extrapolate inherent spatial design potential of 2 dimensional patterns

Develop Pattern Catalog

Based on your assignment 1 results and feedback from your instructor, by now you should have a small collection of 2D patterns and a command of how to generate, control and diversify them. You will now use these control factors to develop variations in these patterns, resulting in pattern families. Methods of creating these variations depend on your original pattern structure and compositional parts. These methods will be explained to you throughout the duration of the assignment.

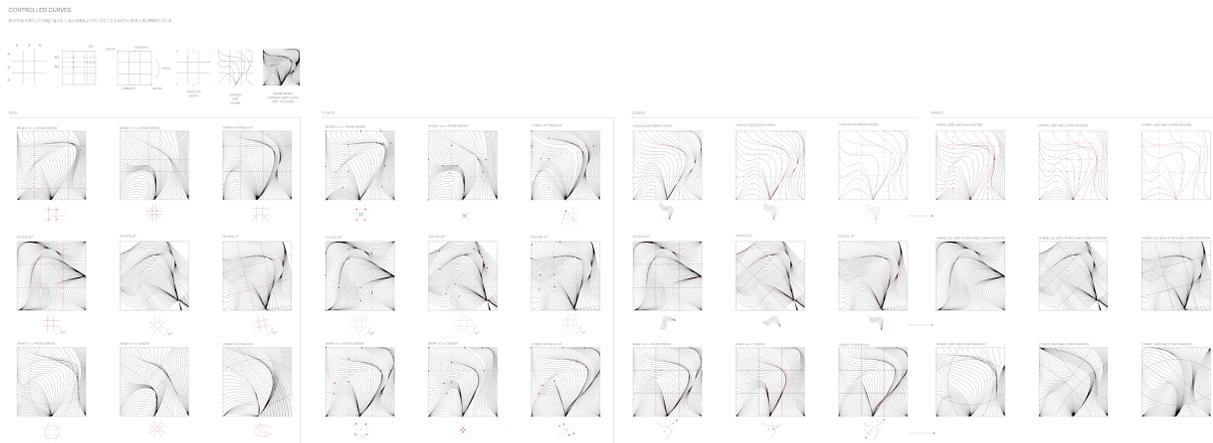
Use the controls and variables identified in assignment 1 to categorize these variations and fit them within a table based on the controls, resulting patterns, and relationships between patterns. Each pattern variation should be labeled according to the specific control factor which is changing within that variation subcategory. Each variation should be placed within the overall table depending on its relationship to other variations. The overall table must allow the viewer to make comparisons between variations and understand how variations have been developed.

Create a 'Tile'

Using 3D Modeling techniques learned in dsIT102, spatially develop 2 selected patterns to create a 3D tile. During the design process, evaluate tessellation strategies, tiling proportions and appropriate dimensions for interior design applications.

The design of your tile will be approved by your instructor during presentations on February 16.

The approved tile will be adjusted to specified fabrication formats and prepared for digital fabrication. The fabricated tile and casted results will be presented during your midterm review presentations.



Pattern catalog by Nita Tjahjana and Sierra Kistler, University of Oregon, 2016. Instructed by Marziah Zad, Mohsen Marizad.

[ASSIGNMENT 04] Design FrameWork and Cafe Design

February 16, 2022

Work in groups of 2.

Due: March 09, 2022 MIDTERM

Assignment Goals:

- Assign function and scale to spatial patterns and compositions as interior design elements and enclosures..
- The result of this assignment is a geometric framework that has the flexibility to generate objects such as furniture and lighting pieces as well as spatial enclosures, specifically a cafe within the lobby space of the Standard Hotel in Los Angeles.
- Also required for this assignment are diagrams and visualizations which describe and expand upon the system.
- Explore spatial relationships, anthropometric data and design impact in the development of a cafe interior.

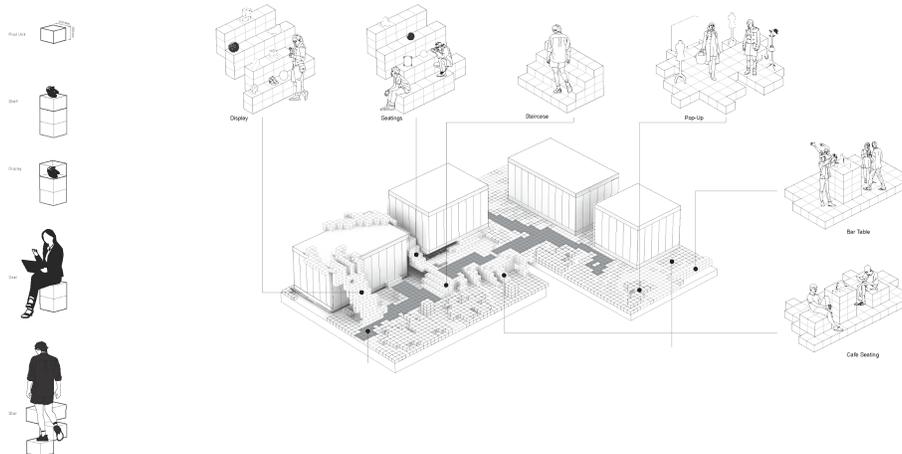
Design System Framework

At this juncture in the semester you should have a substantial library of 2 dimensional and 3 dimensional patterns developed through your dsIT102 coursework. You should also have a strong understanding of how these patterns are generated, controlled and furthermore, what specific spatial, structural and performative qualities inherently exist within each 3 dimensional pattern configuration.

You will now use this wealth of geometry and system logic to assign functions and scales for interior design elements. This means that you will be demonstrating how your system can generate seating, lighting, wall partitions, and other interior design elements which objectively incorporate structure, spatial hierarchy and spatial relationships, defined enclosures, interaction between what can be understood as interior spaces and spatial relationships, etc.

Following discussions related to spatial programming and design response to human anatomy and behavior, design the interior of a Cafe in the Standard Hotel Lobby.

Submission requirements will be shared with you based on the attached course schedule.



District S, Beirut. XRef. BAD. Marziah Zad, 2019.

[ASSIGNMENT 05] Design Proposal for The Standard Hotel Public Spaces

March 14, 2022

Work in groups of 2.

Due: May 16, 2022 FINAL REVIEW PRESENTATIONS

This assignment is due along with all previous assignments for your FINAL REVIEW

Assignment Objectives

- Develop integrated design projects through utilizing spatial, structural and performative factors of 3 dimensional patterns.
- Implement patterns onto site and adapt patterns to respond to design programmatic and contextual specifications.

Design Proposal for The Standard Hotel Public Spaces.

Each geometric framework consists of both a formal morphology and a system of controls which determine how the spatial composition is formed. These controls can be used to adapt and restructure spatial configuration based on inputs from the designated site and the program. Furthermore all spatial patterns exist within a family or category of patterns which are interrelated and formally integrative. Consequently, more than simple adaptation, varying patterns can be interwoven or combined to create super patterns which respond to varying scales, requirements and criteria. All patterns can also be deformed by altering the base grid, or scales can be changed by applying attractor points to the 3D patterns.

The challenge is to translate all programmatic and site factors into a codified system that allows for an overlapping language between abstract geometric patterns and site and programmatic inputs. This codification of factors from the physical and natural world should inform spatial patterns to react, respond and adapt to the design requirements of your project, resulting in a highly comprehensive, integrated project which responds to multifarious design criteria through a straight-forward, rational and simple system of relationships developed from all your experimentation and analysis of patterns throughout the term.

Further details related to the site, program functionality, theories and concepts will be shared with you in a separate handout. Based on skills you have acquired throughout the semester, you must show agency and ability to adapt the geometric framework you developed earlier to respond to human needs, spatial requirements, contextual specifications, and your own ideas of materiality, ambiance and spatial identity.

Submission requirements will be shared with you based on the attached class schedule.



District S, Beirut. XRef. BAD. Marziah Zad, 2019.