ARCH 573
Performance + Computation (Ulsan, Korea)
Technology & Performance

Traveling Studio: Ulsan, and Seoul (Korea, South)
INSTRUCTOR: Yun Kyu Yi, Ph.D.

Important!!!

The Ulsan, Korea Travel Studio is a funded program that covers airfare, accommodation, and other major expenses. Howeve, ***participants will need to cover personal expenses*** such as meals, public transportation, entrance fees, and other miscellaneous costs.

Please note that restaurants and food in Korea may not always clearly label vegan, vegetarian, or other dietary restrictions. Most restaurants may not offer options that meet these dietary needs. ***As we may not be able to accommodate specific dietary restrictions***, we recommend reconsidering your application to this studio if this is a serious concern for you.

All students enrolled in the studio must travel to Korea to participate in the Final Presentation. Therefore, *they must have a* ***valid passport at the time of travel*** *and, if required for their country of origin,* ***a visa for the Republic of Korea (South Korea)****.*

Priority is given to students in the ***Building Performance Concentration*** and to ***Second-year*** graduate students.

c:\ Statement_
Computation in architecture has moved well past 2D/3D modeling and rendering. Building simulation now operates inside the design-generation loop itself, giving architects continuous performance feedback as a design develops. Generative AI — image diffusion models, agentic coding assistants, and LoRA-trained visual models — extends this further, raising the same question this studio asked in its prior iteration: what role does the architect retain when computation participates directly in authorship?

This iteration applies that question to an environment with no precedent in terrestrial practice: the lunar south pole. The studio research historic nomadic building traditions — structures built for mobility, minimal material import, and adaptation to extreme and shifting conditions — and tests whether their underlying logics (tensile systems, deployable lattices, metabolic scaling) translate to a site with no atmosphere, extreme thermal cycling, and a hard mass-import penalty for every component.

The studio is explicitly not speculative fiction. All design work is grounded against current mission architecture, NASA engineering constraints, and real environmental datasets, in direct

collaboration with Doug Litteken (NASA). The studio's organizing theoretical tension is exploration versus colonization: whether a nomadic, low-impact approach to lunar presence is a viable alternative to import-heavy, colonization-style infrastructure.

c:\ Site_ (Lunar South Pole)

1. The studio will travel to Ulsan during the Fall break to present final work to critics (Nov. 21 – Nov.).
2. Since the final presentation will be in Korea, students with personal reasons or other commitments that prevent them from traveling are encouraged not to take this class.
3. Students are expected to respect the local culture and follow all local laws and regulations to avoid any legal troubles.
4. Take the opportunity to explore local sites, try new foods, and immerse yourself in the culture. A willingness to try different experiences is highly encouraged for those taking this class.
5. Make connections with local students to enrich your experience.

c:\ Prerequisite Skills and Foundational Knowledge _

1. Skill or willingness to design a multi-purpose building at the studio level.
2. Fundamental knowledge of environmental and sustainable design principles.
3. Basic skill or willingness to use parametric design tools (Rhino, Grasshopper).
4. Basic skill or willingness to use computational simulation tools (Ladybug/Honeybee; awareness that standard building-energy engines assume an Earth atmosphere and will require adaptation - see Section 10).
5. Basic skill or willingness to use agentic AI coding tools (Claude Code) and image-generation pipelines (ComfyUI, LoRA fine-tuning).
6. Basic skill or willingness to use Git/GitHub for version control on scripts and configurations.
7. Willingness to engage with aerospace engineering constraints (mass budgets, launch requirements, thermal environment) as binding design parameters, not background flavor.

c:\ Studio constraints_

1. Willingness to do different design approach
2. Quality of outcome depends on skills of computation. - understanding of tools such as grasshopper, blender, google Colab, python, etc.
3. Team project of two or three
4. Focused on design methodology not buildability

c:\ Q&A_

1. Do I need to know how to use grasshopper and other tools (python, blender)? If you know your will have more potential for exploration. But studio will cover basics of grasshopper and other computational tools. Highly recommends willingness to use or has skill on these tools.

2. Is the studio team project? Yes, you will choose your team member, the grad of each member will be different by how much member contributed to the project.

3. Do we have to develop floor plans, site plan, or other technical drawings? The studio is to do research not to do design, the studio will focus on how to use computation to generate design not sol ving technical design problems. If you are more interest on practical or technical design, I will not recommend taking this studio.

*All schedules are not final and might change or be canceled

C:\ Example works from last year.

C:\ Photos from last year


ILLINOIS
ARCHITECTURE
1867