ODDKIN

As we race through our planet–scarce resources to sustain the appetite of consume–and–dispose culture, the need to reevaluate our non–regenerative processes of existence becomes increasingly more urgent. Our collective response to climate stress will require not just innovative tools and technologies, but social and economic transformation – a shift in our thinking about the biophysical world and our role and responsibility in it.

Coined by science and technology scholar Donna Haraway in her book *Staying with the Trouble: Making Kin in the Chthulucene* (2016), the concept of “oddkin” is defined as the “unexpected collaborations and combinations” of seemingly unrelated things. Similar in concept to “symbiosis,” a biological relationship in which members of different species live in close physical contact, establishing long–term and permanent mutualities and two–way dependencies with one another, oddkin is a method of survival in the Anthropocene, according to Haraway, and one that challenges the human exceptionalism that has gotten us into this mess. According to the evolutionary theorist and biologist Lynn Margulis, symbiosis generates novelty and could even be responsible for the evolution of multicellular life.
In this course we will experiment with such symbiotic mergers within the context of the Anthropocene. In collaboration with biologists, expert consultants from the Biodesign Challenge community, and industry partners, we will explore the ways in which biological, technological, and cultural systems could be integrated through the design of new living media and the opportunities that this emerging area of practice might afford to designers, particularly as it relates to current and impending environmental challenges. The course will introduce new materials, fabrication and prototyping techniques to develop novel biodesign proposals, while exposing students to advanced research and methods informed by current conversations within life sciences, biological design, synthetic biology, bio–arts, interaction design, and other relevant emerging topics.

COURSE NOTES
The course is registered as part of the Biodesign Challenge initiative and will engage experts from the biodesign community. Workshops, lectures and feedback will be organized throughout the semester with expert consultants.

Functioning as a research–based design laboratory, and providing hands–on experience with biological materials, iterative design, prototyping techniques, fabrication methods, as well as futures thinking, students will collaborate to construct a functional living prototype.

ARCH599 is associated with the newly established Landscape Futures Lab at the School of Architecture. As such, we will be drawing from and collaborating with its affiliate faculty and with assigned mentors from the Biodesign Challenge community.

The students with the most provocative and thorough projects at the end of the semester will represent the University of Southern California at the Biodesign Challenge competition held in New York City at the Parsons School of Design and the Museum of Modern Art. The annual Summit is scheduled for June 2022.

The course is scheduled to Tuesdays 2–4:50 PM and will be held in person. Course communication will be conducted via email. We will have a Class Slack Channel for online collective exchange. All course material including readings, lectures and assignment briefs will be uploaded to our Google Drive course folder (link below). While we will engage textual works in the course, classes will be predominanely studio–based, where I will be available for deskrits to discuss your ideas and their physical development.

TECHNOLOGICAL UTILIZATION
We will utilize Adobe Illustrator, Photoshop, Rhinoceros 3D, Photogrammetry, Digital Fabrication and Physical Modeling in the course. Processes with which students have no prior experience will begin with basic in–class introductory tutorials. Students are expected to practice on their own and to utilize online instruction through Lynda.com available to USC students free of charge through the MyUSC portal or other sources of instruction found online (Youtube tutorials, etc).
COURSE READINGS AND SUPPLEMENTARY MATERIALS
Course readings will be used as reference and as theoretical complements to the practical work of media-making in the course. Readings can be accessed via the Google Drive folder for this course.

LEARNING OBJECTIVES AND OUTCOMES
This course covers advanced topics in media and provides the scaffolding for continued inquiry of expanded media within landscape architecture. The exercises, readings, discussions and assignments are designed to support the following goals:

1. **Research + Analysis**: Demonstrate ability to gather, assess, record, and comparatively evaluate relevant information, data, and performance in order to support ideas across design scales.

2. **Technical Mastery**: Demonstrate ability to utilize methods of working in and with the dynamic medium of landscape through iterative media exercises and experimentation.

3. **Technological Mastery**: Demonstrate ability to work between analog and digital media, two and three dimensions, static and dynamic states, and across scales through translatory processes of making.

4. **Clarity**: Demonstrate ability to present your visual work articulately and concisely paying close attention to craft.

Your assignments will be evaluated based on the following criteria:

**Intent**: You will be evaluated based on the ability to articulate your rationale in all aspects of your work including the following: verbal, visual, digital, technical, and physical modelmaking.

**Process**: You will be evaluated on the iterative process of making. You are expected to take risks and engage in design exploration. Your project must develop over time and respond to critique.

**Craft**: You will be evaluated on the quality of your drawings, models and verbal presentation, which demonstrate your mastery of the skills and techniques introduced in this course.

Participation in discussions of readings, during pinups and deskcrits is also required for success in this course. Inspired by previous student feedback, a part of your evaluation will be based on a statement of collaboration that you submit as a group at the end of the course (as “peer evaluation”).

ASSIGNMENT SUBMISSION POLICY
Please upload high resolution files in the appropriate format (jpeg, pdf, etc), 3D model files, and properly photographed images of completed assignments to the Google Drive folder for the course.
DESCRIPTION AND ASSESSMENT OF ASSIGNMENTS
A full writeup with requirements for each of the assignments will be handed out in writing in advance. Full completion of assignments is expected and required for success in this course.

GRADING TIMELINE
I will provide regular feedback during pinups and deskcrits. Formal written feedback will be provided at the midpoint of the semester.

GRADING BREAKDOWN
<table>
<thead>
<tr>
<th>Participation / Peer Evaluation</th>
<th>15%</th>
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<tbody>
<tr>
<td>Assignments:</td>
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<tr>
<td>Assignment 1: Mutual Modulations</td>
<td>25%</td>
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<tr>
<td>Assignment 2: Iterative Logics Models</td>
<td>25%</td>
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<tr>
<td>Assignment 3: Living Prototype</td>
<td>35%</td>
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GRADING SCALE
Course final grades will be determined using the following scale:

- A  95–100
- A−  90–94
- B+  87–89
- B   83–86
- B−  80–82
- C+  77–79
- C   73–76
- C−  70–72
- D+  67–69
- D   63–66
- D−  60–62
- F   59 and below

ASSIGNMENT 1 SUMMARY: MUTUAL MODULATIONS
Biological phenomena and processes, such as symbiosis, metamorphosis, etc., have the capacity to offer new ways of understanding life and forms of adaptation and survival more generally. In this first assignment, we will be studying how species modulate according to environmental factors and vice-versa, how environments modulate to accommodate (or alienate) specific species. We will be studying these species–environment encounters and entanglements as a concept or tool with which to think about future forms of evolution and the potentials and possibilities of transformation and influence between biological species and external systems.

ASSIGNMENT 2 SUMMARY: ITERATIVE LOGICS
Taking the logics, patterns, behaviors and flows that you have identified in Assignment 1 within your chosen organism and its environmental context, you are asked to create iterative models following one of three presented formats. Think of all three of these formats as providing the opportunity to build study models that will further develop your understanding of your chosen organisms/processes by working with them as source material through 3 dimensional thinking. You will build on the knowledge and experimentation established here to construct a living prototype as your final assignment.

ASSIGNMENT 3 SUMMARY: LIVING PROTOTYPE
Further adjusting your models to respond to feedback and critique from the last assignment, you are asked to develop a large scale final prototype that seamlessly & meaningfully integrates your living system/organism within its formal, procedural, structural, or material logics.
**COURSE READINGS**

**Introduction**  


**State of Biodesign Today**  


**Our Biotech Future**  


**Building with Biology**  


**Broken Nature**  


**Design for Different Futures**  


**Synthetic Aesthetics**


**USEFUL RESOURCES**

Biodesign Challenge: https://biodesignchallenge.org/

Biodesigned Journal: https://www.biodesigned.org/

Circular Design: https://www.ellenmacarthurfoundation.org/explore/circular-design

Futures Material Bank: https://www.futurematerialsbank.com/

arcCA Materials: http://arccadigest.org/category/the-materials-issue/

The Living: http://www.thelivingnewyork.com/

Mediated Matter: https://mediatedmattergroup.com/

Innovation through Biodesign: https://www.youtube.com/watch?v=JTMXhb00Mi0
<table>
<thead>
<tr>
<th>WEEK</th>
<th>CONTENT:</th>
<th>DAILY ACTIVITIES / READINGS / DELIVERABLES</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Course Introduction</td>
<td>Introduce Assignment 1: Mutual Modulations</td>
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<td>Week 2</td>
<td>Group–Crits: Mutation Modulations</td>
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<td>Week 3</td>
<td>Group–Crits: Mutation Modulations</td>
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<td>Week 4</td>
<td>Group–Crits: Mutation Modulations</td>
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<td>Week 5</td>
<td><strong>Mutual Modulations Due</strong></td>
<td>Introduce Assignment 2: Iterative Logics Models</td>
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<td>Week 6</td>
<td>Group–Crits: Iterative Logics Models</td>
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<td>Week 7</td>
<td>Group–Crits: Iterative Logics Models</td>
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<td>Week 8</td>
<td>Group–Crits: Iterative Logics Models</td>
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<td>Week 9</td>
<td><strong>Iterative Logics Models Due</strong></td>
<td>Introduce Assignment 3: Living Prototype</td>
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<td>Week 10</td>
<td>Group–Crits: Living Prototype</td>
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<td>Week 11</td>
<td>Group–Crits: Living Prototype</td>
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<td>Week 12</td>
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<td>Week 13</td>
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<td>Week 14</td>
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<td>Week 15</td>
<td>Group–Crits: Living Prototype</td>
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<tr>
<td>FINAL</td>
<td>Final Review</td>
<td><strong>Judging: Living Prototype Due</strong></td>
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OTHER RESOURCES

Attendance
The School of Architecture’s attendance policy is to allow a student to miss the equivalent of one week of class sessions (so one class session for ARCH 599) without directly affecting the student’s grade and ability to complete the course. If additional absences are required for a personal illness/family emergency, pre-approved academic reason/religious observance, the situation should be discussed and evaluated with the faculty member and appropriate Chair on a case–by–case basis. For each absence over that allowed number, the student’s letter grade will be lowered 1/3 of a letter grade (e.g., A to A–).

Any student not in class within the first 10 minutes is considered tardy, and any student absent for more than 1/3 of the class time can be considered fully absent. If arriving late, a student must be respectful of a class in session and do everything possible to minimize the disruption caused by a late arrival. It is always the student’s responsibility to seek means (if possible) to make up work missed due to absences, not the instructor’s, although such recourse is not always an option due to the nature of the material covered.

Late Assignments
To remain fair to the rest of your classmates, any assignments that are received after the deadline will be docked 1/3 of a letter grade for every day late.

Academic Conduct:
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:
Student Health Counseling Services – (213) 740–7711 – 24/7 on call engemannshc.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline – 1 (800) 273–8255 – 24/7 on call suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740–4900 – 24/7 on call engemannshc.usc.edu/rsvp
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX – (213) 740–5086 equity.usc.edu, titleix.usc.edu
Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

**Bias Assessment Response and Support** – (213) 740–2421  
[studentaffairs.usc.edu/bias-assessment-response-support](http://studentaffairs.usc.edu/bias-assessment-response-support)  
Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

**The Office of Disability Services and Programs** – (213) 740–0776  
dsp.usc.edu  
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

**USC Support and Advocacy** – (213) 821–4710  
[studentaffairs.usc.edu/ssa](http://studentaffairs.usc.edu/ssa)  
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

**Diversity at USC** – (213) 740–2101  
diversity.usc.edu  
Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

**USC Emergency – UPC: (213) 740–4321, HSC: (323) 442–1000 – 24/7 on call**  
dps.usc.edu, emergency.usc.edu  
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

**USC Department of Public Safety – UPC: (213) 740–6000, HSC: (323) 442–120 – 24/7 on call**  
dps.usc.edu  
Non–emergency assistance or information.