

*Waterloo Architecture*

## **ARC 510 RESPONSIVE ARCHITECTURE: EXPLORING ARCHITECTURE AND ORGANICISM**

*Wednesday morning from 9:30 – 12:20*

*Philip Beesley*

*May 10, 2023*

### *Territorial Acknowledgement*

*We acknowledge that the School of Architecture is located on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University is situated on the Haldimand Tract, the land promised to the Six Nations that includes 10 kilometres on each side of the Grand River. (see references here:*

*<https://uwaterloo.ca/engineering/about/territorial-acknowledgement>)*

This course provides an interdisciplinary exploration of the rapidly emerging field of responsive architecture, featuring weekly round-table discussion where readings will be interwoven with in-class drawing, writing and diagramming exercises.

Can architecture integrate living functions? To support exploration of this question, a range of readings and examples from contemporary physics, biology, and computational systems will be featured. Readings will include tangible explorations including natural growth, spatial and cybernetic organizations and study of paradigms and underlying principles. Contemporary architectural movements including cybernetics, biomimicry and soft architectures offer a wealth of practical examples that can inform contemporary architectural design. The examples offered by these studies can provide valuable references for designing with complex far-from equilibrium systems.

A primary activity will be discussions where we reflect on material together, exploring implications through discussion and workshop exercises. Student-led seminars will form one of the cores of the course. Drawing and diagramming exercises conducted within the class will build from primary geometry and explore relationships within complex systems. Each seminar will focus on a specialized topic, produced by students working

individually and in small groups. Resources from Waterloo Architecture's Living Architecture Systems Group will support the course.

Each student will be asked to choose one of the topics and lead a seminar discussion during a class, presenting their own explorations supported by a key assigned reference.

A final assignment will involve submission of a set of references that includes the readings throughout the class following an assigned format, supplemented by your own independent readings, and assembled into a catalogue relevant to your own studies. This can be created by recording references during each class, accompanied by an integrative essay that surveys the readings.

*During the seminar, each student will be asked to produce the following:*

*Assignment One: Seminar presentation produced by individual students, accompanied by summary notes composed as a reference hand-out.*

*40% of final grade, evaluated for conceptual quality, depth and ambition, and 'craft' quality of presentation. Share your presentation in the form of a .pdf on Basecamp for all-class reference.*

*Assignment Two: Catalogue of readings accompanied by section introductions, and by a 2,000 word essay that reviews selected material and expands on reading topics of your choosing.*

*40% of final grade, evaluated for quality of catalogue including conceptual quality of summary and integration of evolving ideas.. Present your work-in-progress during the final class. Submit your catalogue on Basecamp.*

*Participation: 20% of the final grade will be assigned for class participation, evaluated for consistency of attendance and contributions to the group within discussions.*

## *Topics & Schedule*

*Note: the specific readings and topics may be adjusted to reflect interest and development during the course. Links will be provided for each reading.*

1. *May 10*  
*Introduction*
2. *May 17*  
*Introduction 2*
3. *May 24*  
*Seminar A: Haeckel, Froebel, Kindergarten*
4. *May 31*  
*Seminar B: Vernadsky and de Chardin: Biosphere and Noosphere*
5. *June 7*  
*Seminar C: Origin of Life, Schrodinger, What is Life?; Genetic Takeover, Graham Cairns-Smith*
6. *June 14*  
*Seminar D: Edges of Surrealism, Insect Mimicry, Rogier Caillois*
7. *June 21*  
*Seminar E: Prigogine and Dissipative Structures*
8. *June 28*  
*Seminar F: Alan Turing and Gordon Pask*
9. *July 5*  
*Seminar G: Nicholas Negroponte Soft Architecture Machines*
10. *July 12*  
*Seminar H: Gilles Deleuze and Felix Guattari, One Thousand Plateaus*
11. *July 19*  
*Seminar I: Nicholas de Monchaux, Space Suit*
12. *July 26*  
*Work in Progress reviews*

*Hand-in: during Examination Period August 2023, date to be determined*

## *Course Delivery Platforms & Communication*

[\*Responsive Architecture Elective May 2023\*](#)

## **Governing Principles**

### *COVID-19 Special Statement*

*Given the continuously evolving situation around COVID-19, students are to refer to the University of Waterloo's developing information resource page (<https://uwaterloo.ca/coronavirus/>) for up-to-date information on academic updates, health services, important dates, co-op, accommodation rules and other university level responses to COVID-19.*

*As we pivot to remote teaching to start the term, instructors may need to record lectures. In this case, the course's official Notice of Recording document will be found on the course's LEARN site. This document outlines shared responsibilities for instructors and students around issues of privacy and security. Each student is responsible for reviewing this document.*

### *Fair Contingencies for Emergency Remote Teaching*

*We are facing unusual and challenging times. The course outline presents the instructor's intentions for course assessments, their weights, and due dates. As best as possible, we will keep to the specified assessments, weights, and dates. To provide contingency for unforeseen circumstances, the instructor reserves the right to modify course topics and/or assessments and/or weight and/or deadlines with due and fair notice to students. In the event of such challenges, the instructor will work with the Department/Faculty to find reasonable and fair solutions that respect rights and workloads of students, staff, and faculty.*

### *Late Work*

*Submit your work on time. Late work would be penalized at 5% per day.*

*Only in the case of a justified medical or personal reason will these penalties be waived, and only if these have been officially submitted to the Student Services Co-Ordinator and accepted by the Office.*

*Students seeking accommodations due to COVID-19, are to follow Covid-19-related accommodations as outlined by the university here: (<https://uwaterloo.ca/coronavirus/academic-information#accommodations>).*

### *Passing Grades*

*The standard minimum passing grade in each ARCH course is 50%. Grades below the specified passing grade result in a course failure.*

### *Mental Health Support*

*All of us need a support system. We encourage you to seek out mental health supports when they are needed. Please reach out to Campus Wellness ( <https://uwaterloo.ca/campus-wellness/>) and Counselling Services ( <https://uwaterloo.ca/campus-wellness/counselling-services>).*

*We understand that these circumstances can be troubling, and you may need to speak with someone for emotional support. Good2Talk ( <https://good2talk.ca/>) is a post-secondary student helpline based in Ontario, Canada that is available to all students.*

### *Equity, Diversity and Inclusion Commitment*

*The School of Architecture is committed to foster and support equity, diversity and inclusion. If you experience discrimination, micro-aggression, or other forms of racism, sexism, discrimination against 2SLGBTQ+, or disability, there are several pathways available for addressing this:*

*A) If you feel comfortable bringing this up directly with the faculty, staff or student who has said or done something offensive, we invite you, or a friend, to speak directly with this person. People make mistakes and dealing them directly in the present may be the most effective means of addressing the issue.*

*B) you can reach out to either the Undergraduate office, Graduate office, or Director. If you contact any of these people in confidence, they are bound to preserve your anonymity and follow up on your report.*

*C) You can choose to report centrally to the Equity Office. The Equity Office can be reached by emailing [equity@uwaterloo.ca](mailto:equity@uwaterloo.ca). More information on the functions and services of the equity office can be found here: <https://uwaterloo.ca/human-rights-equity-inclusion/about/equity-office>.*

*D) [Racial Advocacy for Inclusion, Solidarity and Equity \(RAISE\)](#) is a student-led Waterloo Undergraduate Student Association (WUSA) service launching in the Winter 2019 term. RAISE serves to address racism and xenophobia on the University of Waterloo campus with initiatives reflective of RAISE's three pillars of Education and Advocacy, Peer-to-Peer Support, and Community Building. The initiatives include but are not limited to: formal means to report and confront racism, accessible and considerate peer-support, and organization of social events to cultivate both an uplifting and united community. You can report an incident using their [online form](#).*

*Academic integrity, grievance, discipline, appeals and note for students with disabilities:*

*Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](#) for more information.]*

*Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](#). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.*

*Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check [the Office of Academic Integrity](#) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).*

*Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](#) (other than a petition) or [Policy 71, Student Discipline](#) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72, Student Appeals](#).*

*Note for students with disabilities: [AccessAbility Services](#), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with [AccessAbility Services](#) at the beginning of each academic term.*

*Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server; therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course. It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit the alternate assignment.*



Waterloo Architecture  
**ARCH 510**  
**Responsive Environments**  
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## **ASSIGNMENT I SEMINAR PRESENTATION**

**Assigned:** May 10, 2023

**Submit:** Digital document reproducing your presentation- see format instructions below

**Due:** post to Basecamp in order to serve as class resource

**Present:** Approximately 15 minute talk presenting a specialized portion of your catalogue. .  
Accompany your presentation by summary notes composed as a reference hand-out.  
Include a summary hand-out for the class.

Submit your presentation on LEARN as a formal assignment submission. Share your presentation in the form of a .pdf on Basecamp for all-class reference.

**Evaluation:** 50% of final grade, evaluated for conceptual depth, ambition, and quality of presentation.

### **Topics & Schedule**

*Note: the specific readings and topics may be adjusted to reflect interest and development during the course. Preliminary sources will be provided for each reading, and you should supplement this with resources that you gather and review yourself.*

*May 24: Seminar A: Haeckel, Froebel, Kindergarten*

*May 31: Seminar B: Vernadsky and de Chardin: Biosphere and Noosphere*

*June 7: Seminar C: Origin of Life, Schrodinger, What is Life?; Genetic Takeover, Graham Cairns-Smith*

*June 14: Seminar D: Edges of Surrealism, Rogier Caillois and Georges Bataille*

*June 21: Seminar E: Prigogine and Dissipative Structures*

*June 28: Seminar F: Alan Turing and Gordon Pask*

*July 5: Seminar G: Nicholas Negroponte Soft Architecture Machines*



*July 12: Seminar H: Gilles Deleuze and Felix Guattari, One Thousand Plateaus*

*July 19: Seminar I: Nicholas de Monchaux, Space Suit*

**ARCH 570**

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## **ASSIGNMENT 2 CATALOGUE**

**Assigned:** May 10, 2023

**Submit:** Digital document, formatted for 8 ½" x 11" printing

**Due:** Exam Period date to be determined

**Work-in-progress Review:** July 26 starting 9:30 a.m. All class members act as reviewers, producing brief written notes for each presentation

**Present:** 10 minute talk presenting a specialized portion of your catalogue.

**Note:** This assignment may be modified and refined to suit actual progress of the class during the course.

### **Summary**

Create an illustrated catalogue of texts and precedent projects that provide short summaries of each of the readings sources presented during this course following a prescribed format as described below. Select and quote one or more sample texts or illustrations from each reference. Organize this material into groups identified with topics of your choosing, framing general themes and disciplines that can support your long-term interests. Use a standard format that permits evolving organization of these samples.

Compose an introductory essay to the catalogue that surveys the material and identifies particular research allied with your own interests. Compose expository introductions to each topic group, surveying the ingredients and indicating the general nature and approaches offered by the references.

Choose one or more references for substantial investigation. Quote at least two specific authors within this essay. Provide detailed summaries of key parts of these selections accompanied by your own commentary. Accompany this material with illustrations.

Demonstrate your control of academic writing and rhetorical knowledge-creation crafts through integration of citation and commentary within this essay.

*Demonstrate your control of publication craft through integration of a publication template that includes standard book elements.*

***Details as follows:***

*Create a modular consistent format for this collection with one page per entry.*

*On each page, show the bibliographic entry for the source at the top left of the page.*

*Option: copy an image from the source. Compose a caption for each image, including identification of content and image source.*

*Follow this with one or more selected quotes. Indicate the specific source at the end of this quote.*

*Below the quote, write an expository sentence that identifies and describes the source. Write one or more following sentences that discuss the source.*

***Contents***

*Organize your catalogue with a table of contents that employs carefully-chosen topic groups related to this elective and, chosen for their relevance to your emerging interests.*

*Compose section introductions that outline groups of sources, providing brief introductions to each topic-group.*

*Compose an essay that acts as a succinct review of this literature and precedent projects. Minimum length: 2,000 words. Describe the sources that are particularly relevant to your interests, indicating specific authors and the approaches that they take. Designers can also be included.*

*Within this literature review, describe problems. Discuss questions and debate that arise within the material you have gathered: what issues are raised? Are there differing views?*

*Attempt to align yourself with sources of your choosing. Do you feel affinity with certain approaches? Conversely, are you critical of the position taken by any of the authors and designers?*

*Include comments and citations, positioned as margin or endnotes.*