The building envelope has become the single most significant element within the contemporary economy of building. It bears much of the identity and amenity of buildings, is the site of significant expenditure, the occasion of environmental concern and attention, the object of much technological innovation, and the locus of entropy. This course provides an advanced study of the building envelope as the place where design, technology, building science, and environmental concerns converge. It discusses matters such as natural light and ventilation or the short- and long-term behaviours of building materials, and assesses the use of new generations of "smart" mechanical environmental devices. This course is required for all two-year Masters’ students and an elective option for students in thesis year.

Students will investigate and report on technical issues as they relate to the development of the comprehensive building project in the parallel Design Studio. Innovation and integration in architectural design will be stressed with respect to structure, building envelope, environmental systems, health and life safety, movement systems, site planning and the integration of information technology.

This studio represents a culmination of the pre-professional degree, through the integration and application of skills and knowledge to a complex building project. Students will develop designs to a high level of detail. A concern for technical material, environmental and legal aspects of architecture will support open speculation and innovative design.
ELECTIVE COURSE – (students for whom English is not the first language)

Course Topic: Scholarly Writing in English  
Course Code: EMLS 602R  
Instructor(s): Agnieszka Wolczuk  
Day/Time: Wednesday 2:00-6:00PM  
Enrolment Cap: 25  

Designed specifically for graduate students for whom English is not the first language, English 602R introduces the skills and knowledge required to write a variety of informative and persuasive documents, both at university and at work. A primary goal is to enhance students’ ability to write for readers with varying levels of technical knowledge. To that end, the course focuses not only on vocabulary building (including idioms) but also on clear, concise and correct communication.

FALL 2018 GRADUATE ELECTIVES (students fluent in English writing can select from one of the electives below)

Course Topic: Material Syntax  
Course Code: ARCH 684_001  
Instructor(s): David Correa  
Day/Time: Wednesday 6:30-9:30 pm ARC 2008  
Enrolment Cap: 16  

This course will explore design at multiple scales. Building from the micro-structure of material, the functioning form and the process of materialization to the design of a brand identity. Conceived as a hands-on, concise design project, the course will look at Making as an emergent design process of direct engagement with conceptual and material elements.

Interest in materials to inspire curiosity and curiosity to challenge design boundaries are assets for this course.

Course Topic: Approaches to Architecture and Urbanism  
Course Code: ARCH 520_001  
Instructor(s): Marie-Paule Macdonald  
Day/Time: Wednesday 2-5pm ARC 2026  
Enrolment Cap: 10  

The course develops a trans-disciplinary overview to design approaches in architecture and urbanism using image- and symbol-making as key activities in designing environments. The course evaluates the quality of results and the quality of process of design of environments. The students address topics within a wide range of subject matter groupings, from sustainable architecture to engineering, landscape and infrastructure, to branding and aesthetic practices, to design within the municipal political forum. Students present seminars on diverse categories of design as a means to develop a personal design ethos. The final submission includes a set of drawings, diagrams and images that represent a set of design principles allowing students to consciously take a position in the world as a designer.

*This course requires a course add form in order to be added to your schedule. Please email
We are all indigenous peoples of this Earth, and we need to come together in our original identities to nurture our relationships together in respectful and meaningful ways. Out of that encounter arises authentic and beautiful architectural expression. For thousands of years the places/spaces of the Grand River watershed have hosted the occupations and cultures of native peoples. They are all still here in some identity [actual, adopted, or integrated]. The landscape surrounding Lake Ontario “the beautiful water” and Lake Erie are sacred to three aboriginal cultures – Wendat, Haudenausaunee and Anishnabec. In their continuing adjustments to settler encounters and migrations, the community surrounding the small village of Ohsweken have become the homeland of the Six Nations. As Architects, it behooves us to understand the origins of place held in the land itself examined through the rituals of archaeological investigation and recording, and to respectfully confer with the memories of our aboriginal Elders for grounding and guidance. These are the ancient and necessary protocols out of which all design and use of materials spring most naturally and profoundly.

Here at Waterloo Architecture Cambridge the primary place in this search is located fifty kilometers south along the banks of the Grand River at Six Nations – the sanctuary of the Iroquois, or Haudenausaunee, culture today. Haudenausaunee translates “people who build the long house” imparting the culture with a uniquely architectonic identity and duty making it particularly relevant to architects. In the deepest sense, all true architecture is carried out as a cultural “duty”, but one must be conscious of what comprises one’s culture. As an Architect and carrier of Haudenausaunee blood, it is my “duty” to share with you this fundamental knowledge. Mine will be an attempt to convey an architectonic teaching through the lens of Iroquoian culture at Six Nations of the Grand River Territory. The hope is that you will be enabled to take up these teachings, adopt/adapt them, integrate/utilize them, deeply and understandingly, in your architectural practices. This will require an attempt to help you in the recovery of your indigenous mind.

*This course requires a course add form in order to be added to your schedule. Please email eeanglin@uwaterloo.ca beginning August 2nd at 9am if you are interested in enrolling and a permission number will be provided to those interested until the course is full.*
The First Nations / University of Waterloo Design Build program engages with the cultural history of the Grand River valley and the relationship to land, natural habitat and the cultural heritage of the Haudenosaunee peoples who have lived here since the late 18th century, as well as the Anishinaabe peoples whose territory this has been for millennia.

Both the School of Architecture building in Cambridge and the University of Waterloo main campus sit within the Haldimand Tract treaty lands, ceded to the Haudenosaunee confederacy in 1784, for their service to the British crown during the American Revolution. Originally the Haldimand Tract extended 6 miles on either side of the Grand River from Lake Erie to its headwaters, yet the current Haudenosaunee territory of Six Nations of the Grand River retains less than four percent of the original Haldimand Tract treaty lands.

Despite surrounding us, First Nations culture remains elusive from every day experience for many of us. The Design Build program responds, in addressing our situation of occupying treaty lands, taking on the opportunity of working with First Nations community groups, contributing to the momentum of the reconciliation movement and offering students the opportunity to design and construct a full scale permanent building, that contributes to local First Nations community infrastructure.

The course aims to build awareness of the diversity of First Nations culture in the Grand River region particularly related to indigenous conceptions of space, ritual events, material culture and architecture. Extending from this cultural awareness training, the course provides the opportunity for collective design work for a pow wow arbor, to be used for annual pow wow gathering at the Mississaugas of the New Credit First Nation, near Hagersville Ontario. In addition, there will be an opportunity for hands-on fabrication in the completion and structural testing of the ritual event pavilion at the sacred oak grove of the Mississaugas, built during the past summer term by Waterloo Architecture students.

The fall graduate elective is the first part of an annual two-course sequence in which the pavilion design, carried out to the level of preliminary working drawings, are completed in anticipation of the building phase that is carried out during the Spring term each year. The Spring term design studio is open to both graduate and undergrad students, allowing graduate students continued involvement in a mentoring role with undergrad students.

Course Topic: RESPONSIVE ARCHITECTURAL SYSTEMS: ABIGENESIS
Course Code: ARCH 684_004
Instructor(s): Philip Beesley
Day/Time: Monday 6:30-9:30pm ARC 2008
Enrolment Cap: 16

This seminar course will offer a series of readings of specialized aspects of responsive, interactive architecture. Readings from contemporary philosophy, cybernetics, and experimental life sciences will be included. The contemporary study of abiogenesis, the transition between inorganic and organic life forms, provides potent material that can be applied to contemporary architecture. These interdisciplinary readings can provide a context for designing complex interdependent systems within contemporary architecture.

Ilya Prigogine, the mid-20th century physicist, proposed a set of paradigms that seem to question the stable world of Vitruvian architecture. We will follow a set of readings and design explorations related to the dynamic form-languages and interacting systems implied by Prigogine’s theories. Prigogine proposed diffusion and dissipation as key terms for understanding how materials could interact in a dynamic, constantly evolving and self-organizing world. Quasiperiodic organizations are revealed by the new interpretations of physics and chemistry offered by Prigogine, forming hybrid topologies composed of multiple interconnected and interdependent systems. These terms can act as emerging paradigms for design.

The seminar will be conducted as a series of readings led by students throughout the term, alternating with professor-led readings and presentations. Material from the Living Architecture System (LAS) group from Waterloo Architecture, Electrical and Computer Engineering, Psychology and Knowledge Integration will be included. Students will be encouraged to participate in active reflection, exploring the implications of the material being presented in open-ended round-table discussions. Critique and extension of the themes embodied in LAS installations will be invited. The varying topics within the seminar course can be refined in order to relate to individual thesis investigations, providing material for integration. No specialized experience in these multiple disciplines is required, but students should have strong interest in exploration of nature and technology.

Readings will include:
- D’Arcy Wentworth Thompson
- Ernst Schrödinger
- Ilya Prigogine
- Gordon Pask
- Humberto Maturana and Francesco Varela
- Jack Szotak
- Craig England
- Rachel Armstrong
- Karen Barad

This selection will be refined and expanded based on class experience and interests expressed in initial discussions.