University of Waterloo School of Architecture
ARCH 570 - 003 - Design Build Graduate Elective - Fall 2019
Grand Studio Design Build Program 2019

Course instructor - John McMinn

Class runs: 2:00 – 5:00 pm Wednesday – Loft Gallery
Alternate 'workshop' sessions will be scheduled on some days during the term.

COURSE DESCRIPTION

> *The architect Douglas Cardinal has said, 'Cultures are based in harmony as a way of being.' And the indigenous meaning was very close to that of the Greeks or of Leibniz or Shaftesbury. Harmony was a concept of the whole and of a balance that went far beyond mere humans. What's more, in their negotiations among themselves and with Europeans, Aboriginals invariably placed themselves and their argument within the concept of harmony. It was an all-inclusive view of the natural order of things, an order in which humans were merely a part. It related to their complex balancing of individualism and group and place, each existing at the same time apart, in complex relationships of cooperation and as nodes 'in an interconnected web.' There are myriad Aboriginal expressions for this. One well-known Cree concept is Witaskewin, or harmonious living, which means living together on the land, that is, an agreement to live together in peace. You could translate it today as democratic federalism or practical environmentalism.*
>
> *John Ralston Saul*

Despite our shared history and common geography, the concept of reconciliation with First Nations culture remains elusive from everyday experience for many of us. The Design Build program offers the opportunity for the practice of a pro-active and pragmatic engagement, through collective experiential learning, linked to the idea of embodied knowledge, intrinsic to First Nations culture and the means of passing on learning and skills from generation to generation.

The Grand Studio 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 Anishinaabe peoples whose territory this has been for millennia, as well as the Haudenosaunee peoples who have lived here since the late 18th century. The courses offered in the program provide an opportunity for students to work directly with Indigenous communities, collectively developing a design, carrying it through detail design and construction

documents, testing and refining the project through prototyping, final prefabrication and on-site full scale construction of a permanent structure. Projects are carried out with a two-part course sequence in Fall and Spring terms, with Fall dedicated to design and prototyping, and Spring term dedicated to pre-fabrication of structural elements within the School, followed by on-site construction within the given community context.

For the Fall term 2019, students will be involved with development of a new cultural interpretive site with the Mississaugas of the Credit First Nation, near Hagersvile Ontario. We will be developing a Masterplan incorporating a Cultural Interpretation Centre, a re-created historic Woodland Village and a new enlarged Pow Wow grounds, along with a campground, site service buildings, and an outdoor performance stage. We will also be working in conjunction with Engineering graduate students who will be responsible for the structural design of a 40' diameter pow wow arbor, and will collaborate on prototyping parts of the pow wow arbor grid shell structure. The term will start with an exploration of the grid shell structure geometries, followed by site research and a visit to the community and subsequent development of a site Masterplan.

COURSE STRUCTURE

The term will be organized in three phases first involving the grid shell research and preliminary design, second involving site research and cultural site programming and preliminary masterplan, and third involving students working in small groups for specialized research and development of one aspect of the overall masterplan. Areas of detailed research could include landscape design of the overall site, programming and community engagement feedback on the masterplan, development of a single building design or engagement with structural design and prototyping for the pow wow arbor grid shell with engineering students. Specifics of the third phase of the course will be determined by students' self-selection of topic areas and partners. Engagement from faculty members both within and outside the School of architecture in the Department of Civil Engineering and the Department of Planning supporting this third phase of the course will also be available to support students' work.

The previous project done in the Design Build program was the design and construction of a smaller grid shell structure for the same community, completed in August 2019 by 2B students. We have been fortunate to have a company offer the donation of a permanent fabric roof cover for the project which will be arriving at some point this fall. Once the cover arrives, we will arrange a site visit to participate with professional installers, to put the cover on the structure. Scheduling for this will be determined during the course of this term.

SCHEDULE

Wk 1
intro and preliminary discussion of grid shells and start of geometry explorations

Wk 2-3
Work with Engineering students in choosing/developing a maximum of three grid shell geometries and site /cultural research

Wk 4
Site visit to the New Credit Community to present the preliminary 3 design options for the grid shell structure, combined with a visit to Green Willow site and discussion and outline of overall site masterplan, infrastructure landscape design and building schematics

Wk 5

Development of masterplan and site programming

Wk 6
Community consultation on site masterplan and landscape design (date to be confirmed with client committee)

Wk 7
Class divides into specialized area of research and design development with guidance from outside faculty in one of the specialized areas of research/design

Wk 8 - 12
Development of small group research and design proposals

LEARNING OBJECTIVES

Course work involves a combination of technical and structural work on grid shell structures, to Masterplanning and programming of a cultural site, landscape design and schematic building proposals. In conjunction with technical / construction details undertaken in the course, students will produce building components prototype elements, refining the design and fabrication process to be used in a larger whole building assembly and its final construction on site.

1. Engage in critical evaluation of the role of architecture in response to First Nations cultural awareness, through community programming, community development initiatives, building form and material expression over time.

2. Explore a variety of options for the design, technical development and detailing of a small scale public building, with consideration of an integrated and holistic relationship between concerns of environmental occupation, the judicious deployment of natural and manufactured materials, and the means of fabrication within a specific First Nations cultural context.

3. Experience the processes of collaboration and consensus building, working with a First Nations community, consultants, fabricators, and materials.

EVALUATION

	Project / Phase	Grade value
P1.	Design modelling and prototyping of grid shell structures	25%
P2.	Research on: First Nations culture/traditions cultural site programming	25%
P3.	Detailed research and design of a thematic area of the larger project	50%

Assessment is based on the course instructor's comparative review of each student's contribution to the work of the group they are involved with, as well as the effectiveness of the group and the contribution of their part of the research, design prototyping and fabrication. Assessment is gauged by; the ambition, clarity and appropriateness of contribution; quality and technical resolution of the work; effectiveness and the completeness of group's work. Participation within the overall group structure of the course is a critical element of the design build process, and a portion of the grade for each project will be based on the course instructor's assessment of the visible participation of each individual's contribution to their group's work. This participation assessment will not be treated as a separate element of the course grading, but will be integrated into the three project/phase grades given for the course.

REVIEW OF COURSE WORK
Given the nature of the design build course, review of the work done in the course will be carried out through presentation and discussion sessions, as well as consultation meetings with the course instructor, consultants and with client representatives, determining if the work produced meets the practical and technical requirements for the elements of the final collective proposal. There will be regular meetings for planning purposes, to discuss the integration of the various component elements of the project and to ensure all aspects of the project are coordinated.

HAND-IN AND SUBMISSIONS
Students and the groups they are working within must complete their research assignment, design proposals, prototyping and fabrication of building components to an acceptable level to obtain a passing average in order to receive credit for this course. As the course is based on collective work, active participation and engagement with the larger group for the purpose of completing the project will be the benchmark for successful participation in the course. In this sense grading is not the ideal measure of success of each students' participation and success in the course, but grading is the required currency of university course work, so we will endeavor to bridge these two reference points without the grading becoming a distraction to the larger goals and ambitions of the course.

Documentation of the process and all aspects of the course, is important for a number of reasons: including students' portfolios, communication about and promotion of the design build program, and fundraising for the ongoing program requirements. This is considered a part of the course deliverables. It would be helpful for one or two members of the class take on the role of coordinating documentation of the work done in the course, as well as contributing to an up to date storage/file system for managing photographic materials, as well as drawings, and images of the completed project. Completion of this requirement will be assessed as part of the participation grade.

LATE WORK
All the work of the various groups will need to be completed in a timely manner, to ensure necessary coordination of the production of the course deliverables. Requests for extensions of agreed upon deadlines must be made as early as possible to the course coordinators and must be made in advance of the given completion phase.

SCHEDULE AND COURSE ATTENDANCE
The course schedule runs Wednesdays from 2:00 – 5:00 pm, however we will discuss the option of adjusting the schedule to allow for longer working session during some portions of the course
Class attendance and participation play a key part in the course and will be noted and evaluated by the instructors.

COMMUNICATION WITH COURSE INSTRUCTORS
During the term, the course coordinators will need to send communications to studio participants. Each student should confirm their current active email address with the Graduate Student Service Coordinator during the first week of class. Any official correspondence must be addressed to the course coordinators at the following email addresses:
jcmcminn@uwaterloo.ca
pdowling@uwaterloo.ca

RECOMMENDED READINGS
Recommended readings may be distributed at various stages throughout the term and as applicable will be

held on reserve in the *Musagetes Library* for use by the class, or will be provided in pdf form. All students are encouraged to actively use the *Musagetes Library* collection and *recommended* readings.

ACADEMIC INTEGRITY AND **AVOIDANCE OF ACADEMIC OFFENSES**

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 www.uwaterloo.ca/academicintegrity/ 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, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. 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 [check www.uwaterloo.ca/academicintegrity/] to avoid committing an academic offence, and to take responsibility for his/her actions. 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, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

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) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for Students with Disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, 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 the OPD at the beginning of each academic term.

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P1 Grid Shells and Lamella Structures

The first exercise of the term looks at Grid shell and lamella structures.

In week 2 we will be meeting with Engineering Grad students and their professor to discuss options for possible grid shells and to choose a maximum of three different geometries, that will be developed and presented to community representatives in Week 4 for of the course.

For this purpose, we'll need to gather information on various types of grid shell lamella structure geometries, including images and drawings, in an attempt to have a comprehensive basis for discussion of what is a manageable structure to fabricate and construct on site in future.

You are asked to work in pairs to gather and assemble this material to be able to preened and pin-up in class in Week 2

We will provide a template for this presentation format.

Further development of the grid shell structures will be determined in conjunction with the Engineering grad students in the coming weeks of the course.