THEMES OF THIS CHAIR

Highlighting sustainable development & design in our programs, in recognition of a rapidly changing planet.

Bringing Indigenous Knowledge, perspectives, and design principles into our programs for better engineering work in Manitoba and Canada.

Developing design spines in our programs to give students mastery-based approaches to learning design skills & thinking.

Continue to support the Engineers-in-Residence Program in these areas.

DESIGN SPINES

are under development. Electrical engineering and Computer engineering have piloted initial implementations in several courses. In Electrical engineering, the spine is built around the progressive design, build, and test of a fully integrated AGC system through the labs in ECE 2220 Digital Logic, ECE 2160 Electronics 2, and ECE 3670 Electronics 3 (champion: Dan Card).

In Computer engineering, the spine is built on the design of a soft multiprocessor network through ECE 2220 Digital Logic, ECE 3610 Microprocessing Systems, and ECE 4850 Modern Computing Systems. This was supported by new DE-10 FPGA boards from Intel (champion: Ken Ferens).

The Civil engineering design spine will be starting implementation in several second-year courses in Fall 2019. It is built on a real local project, in this case a transportation plan including a bridge design at a site within SmartPark. The physical data and existing designs for the project are made available to us, and they become the basis for applications and reverse-engineering in a variety of graphics, geotechnical, hydraulics, and structural courses (champion: James Blatz)

EVENTS

The Design Chair was proud to host or co-host these events in 2018, and looks forward to continuing to be involved in 2019.

- A presentation by Kevin Chief on belonging and leadership, in October 2018.
- Operational Excellence Learning Workshop in April 2018 and coming up again in April 2019, planned by Vern Campbell.
- Aerospace WOWS week on campus in November 2018 and coming up again in 2019, planned by Carolyn Geddert, Phil Ferguson, and Kathryn Atamanchuk.
- A UMES-led workshop on Unconscious Bias, November, 2018.

OTHER HIGHLIGHTS

Strong contributions at CEEA-ACEG 2018 and other engineering education conference venues, five HQP in engineering education & design research, support of student design competition teams.
UPCOMING

ENG 4100 Design Build with Shoal Lake 40 in Summer 2019: This course, cross-scheduled with EVDS 3710 in the Faculty of Architecture, will take Engineering & Architecture students through a complete design & construction cycle of a shelter for feasting at the Pow Wow grounds, a project chosen by the Shoal Lake 40 First Nation community, scheduled to be completed on National Indigenous People’s Day.

Plans are underway to engage a part-time Elder-in-Residence with the Faculty of Engineering for a year, to engage with faculty, students, staff, and industry partners to guide our approach to integrating Indigenous Knowledge and perspectives in engineering curricula and events in culturally sensitive and shared ways.

Seeing Through an Indigenous Lens:
Seven engineering-specific workshops are planned for 2019-2020 for faculty and staff to learn about Indigenous knowledges and perspectives and how to integrate them into engineering curricula in relevant ways.

WORKSHOPS

• Introductory Workshop: Positionality (May 2019)
• ENGAP/Indigenous Students’ Experiences and Perspectives (May 2019)
• The KAIROS Blanket Exercise (September 2019)
• Indigenous Technologies and LEGO Serious Play Workshop (October 2019)
• Storytelling & Teaching Cafe (November 2019)
• Curriculum Workshop 1 (January 2020)
• Curriculum workshop 2 (February 2020)

MORE UPCOMING

A Technological Stewardship workshop, presented by the Engineering Change Lab. This one-day workshop is planned for November 2019 for faculty members, student leaders, and industry partners. It will convey the principles of technological stewardship, and how it calls for personal and professional leadership in our profession.

The Chair is participating in an advisory committee for a three-year project to build the capacity of technical professionals and policy stakeholders to understand, assess and reduce the risks of a changing climate on the infrastructure system. The project, called BRACE - Building Regional Adaptation Capacity and Expertise Program - will develop courses ranging from ½ to 2 days in Climate Resiliency Overview (basic and expanded), Indigenous-Western Climate Cross Learning, Climate Risk Assessment, Asset Management, Climate Law for Professionals, and PIEVC (basic and advanced). BRACE is a collaboration between Natural Resources Canada, Manitoba Sustainable Development, and Engineers Geoscientists Manitoba. Once in place, the Chair plans to support faculty members and student leaders in attending these courses and flowing this expertise into our curriculum.

Do you know someone who may be interested in a part-time opportunity as Engineer-in-Residence focussed on wood design and sustainable building design? Please have them contact Marcia.Friesen@umanitoba.ca.

@UM_DesignChair