EDC Report to Engineers Canada

COVID-19: A Crisis and an Opportunity

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Implications of COVID-19 on Higher Education Institutions

- **The Problem:** Since March 2020, the COVID crisis has impacted the operations and activities of Higher Education Institutions (HEI) at an unprecedent level and rate.
- **The Goal**: Continuity of research and education mission despite cancellation of on-campus activities, while: (1) Protecting health and safety of all students and staff; (2) Ensuring students do not lose their semester or experience delays in graduation; (3) Maintaining (and even increasing) essential activities.
- **The Constraints**:
  - Extremely short time to prepare and implement (days to weeks)
  - Capacity and experience of professors and staff
  - Capacities of on-line systems and tools
  - Equity of access (e.g., students with disabilities, time zone issues, home situation)
  - Complexities with students (e.g. relocation, time zones, restrictions on movement)
  - Personal circumstances of staff and students (e.g., health, dependent children and family members, access to internet, financial resources, access and experience with to technological tools)
  - Internal resources and external support systems (e.g., service providers)
  - Existing policies, practices and cultures

What we did…

- Rapid ramp-down/closure of on-campus activities, except those deemed essential, such as:
  - Building operations & maintenance
  - Continuity of support for essential systems (e.g., animal care, cultures, equipment)
  - Activities that support continuity of remote work
- Supported relocation of students back to their homes
- Equipped and trained staff and students to work from home
- Education: Adapted quickly to bring the Winter semester to completion:
  - Modified course descriptions and grading schemes
  - Shifted to remote instruction (not necessarily online) for lectures and tutorials
  - Implemented alternative approaches to projects and labs (where possible)
  - Implemented new approaches to examinations and other forms of assessment
  - Modified university policies (e.g., pass/fail, satisfactory/unsatisfactory, credit/no-credit grades)
  - Worked with CEAB/Engineers Canada to adapt accreditation to COVID-19 realities
- Research:
  - Supported continuity of graduate studies and research
  - Ramped-up COVID-related research and services
- Worked with partners to support continuity of exchanges, coop placements, internships, etc.

What we are doing…

- Sharing in best practices/resources between HEIs, for example:
  - Moving to remote instruction
  - Remote conduct of project-based work and capstone design projects
  - Remote conduct of final exams
  - Mobilizing to address COVID-19
  - A phased return to research
  - Supporting the well-being of professors, students and staff during the COVID-19 pandemic
  - Planning for the Fall semester
- Conducting all summer courses/programs remotely
- Ensuring, where possible, continuity of experiential learning opportunities
- Supporting students who lack employment opportunities in the summer (e.g., courses, activities)
- Mobilizing across disciplinary boundaries, in conjunction with partners, to accelerate COVID-related research and innovation
- Gradual resumption of activities under safe conditions
  - Ramp-up of priority research
  - Construction
  - Selected high priority activities

What we are doing…

- Adapting to a highly-fluid situation subject to: (1) progress of the disease; (2) government directives; (3) scientific findings; (4) local context and conditions; (5) uncertain resources.
- Working collaboratively:
  - On-going weekly EDC meetings to share best-practices
  - Learning from the Winter 2020 semester
  - Reorienting ongoing initiatives in light of COVID-19: e.g., Canadian Engineering Education Challenge, Canadian Engineering Education Association, EGAD
  - Sharing approaches and resources with respect to virtual labs
- Planning under uncertainty for:
  - Full semester of remote instruction in the Fall (and possibly beyond), including labs
  - Enrolment - Admissions and retention
  - International student issues
  - Equity of access
  - Mental health issues, which are expected to increase amongst young people
  - Community building with limited in-person activities
  - Research (e.g., graduate studies, research projects, partnerships)
  - Budget compressions (potentially massive)
  - Human resources issues (health and safety, hiring freezes, etc.)

What we have learned…

- HEIs can:
  - Innovate and adapt at an unheard-of rate, in support: of education and research
  - Change local cultures and traditions and overcome perceived constraints
  - Effectively work together to share best practices and resources
- A new capacity for remote instruction and online learning has been developed and implemented:
  - Technological tools at our disposal have matured and can be rapidly deployed and scaled
  - We have observed advantages to the integration of technological tools in educational activities
  - These tools can be used to import expertise and insights from others, supporting collaboration across institutions and partners
  - Assessment strategies can be improved and designed to better focus on learning outcomes
  - We have the capacity and motivation to use such tools effectively to enhance our programs
- HEIs can work in partnership with the CEAB/Engineers Canada to ensure adaptability/flexibility in the face of rapid change
- Engineers can be quickly mobilized to work in collaboration with others to respond to major societal challenges, leading to deeper impacts and greater recognition of our importance to society

What we have learned…

- The genie is out the bottle…

- **This crisis represents an unprecedented opportunity for HEIs, Engineers Canada and our partners to build on what we have learned, to enhance the preparation of engineering graduates, and to amplify the impact of our profession.**

- Engineering Deans Canada is fully committed to working with our partners:

  - From the EDC (formerly NDCEAS) Resolution of November 25, 2016: *"The Deans represented within the NCDEAS express their commitment to working collaboratively with Engineers Canada and the Accreditation Board towards our common goal of streamlining and improving the accreditation system in Canada.*

  - From the Calgary Declaration adopted on May 3, 2019: *"We believe that engineering professionals deliver a unique value to society, one that higher education institutions have an obligation to foster and provide. Therefore, we, the members of the Engineering Deans Canada, commit to fulfilling this obligation and call on our partners to work with us to drive substantive change in engineering education for the benefit of our profession and broader society."*