



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Cristina Amon, Dean

MEMORANDUM

2009/10-09

To: Chairs and Directors

From: Cristina Amon, Dean

Date: February 22, 2010

Re: Proposed Process for Cyclical Reviews of Undergraduate and Graduate Programs under the Quality Assurance Framework

On February 8, 2010, the Ontario Council of Academic Vice-Presidents (OCAV) approved the Universities Council on Quality Assurances, *Quality Assurance Framework*. The *Framework*, as part of the University of Toronto's Institutional Quality Assurance Processes (IQAPs), now requires cyclical reviews of undergraduate and graduate programs in a cycle not to exceed eight years.

The following document provides context, describes our overall process proposed under the new *Framework* for meeting the requirements, and provides next steps for implementation.

Context:

The Ontario Council of Academic Vice Presidents (OCAV) created the Guidelines for University Undergraduate Degree Learning Expectations (UDLEs) and Graduate Degree Learning Expectations (GDLEs) which require students to be assessed in six different areas.¹

At the undergraduate level, the Faculty of Applied Science and Engineering offers nine different programs that lead to one of two different degrees. Graduates from our so-called Core 8 programs receive a Bachelor of Applied Science (BASc). Graduates from

¹ The undergraduate DLEs (UDLEs) are categorized as follows:

1. Depth and breadth of knowledge
2. Knowledge of methodologies
3. Application of knowledge
4. Communication skills
5. Awareness of limits of knowledge
6. Autonomy and professional capacity

The graduate DLEs (GDLEs) are categorized as follows:

1. Depth and breadth of knowledge
2. Research and scholarship
3. Level of application of knowledge
4. Professional capacity/autonomy
5. Level of communication skills
6. Awareness of limits of knowledge

our Engineering Science program are awarded the degree of Bachelor of Applied Science in Engineering Science (BASc Engineering Science). Degree Level Expectations (UDLEs) for both of these degrees were approved by our Faculty Council at its May 28, 2008 meeting. The UDLEs were drafted based on a model created by the Council of First-Entry Deans at the University of Toronto.

All our nine undergraduate degree programs are accredited by the Canadian Engineering Accreditation Board (CEAB) of the Canadian Council of Professional Engineers. Therefore, all students graduate with the education requirements for registration as a Professional Engineer (P.Eng.) in all of the provincial Associations of Professional Engineers. The CEAB reviews each program a minimum of every 6 years. The next full review for our programs is scheduled for Fall 2012.

The CEAB has recently added an outcome based approach for reviews that requires the assessment and demonstration of the following 12 CEAB 'Graduate Attributes' for students graduating from our undergraduate programs:

1. A knowledge base for engineering
2. Problem analysis
3. Investigation
4. Design
5. Use of engineering tools
6. Individual and team work
7. Communication skills
8. Professionalism
9. Impact of engineering on society and the environment
10. Ethics and equity
11. Economics and project management
12. Life-long learning

CEAB visits will evaluate the Graduate Attributes starting in 2010 and this evaluation will be noted in subsequent CEAB decisions. To transition to this new method of assessment, compliance with all the Graduate Attributes will not be enforced until 2014. The National Council of Deans of Engineering and Applied Science (NCDEAS) is working with Engineers Canada to develop a framework and assessment metrics to facilitate the review process of Graduate Attributes.

These two sets of requirements (UDLEs and CEAB Graduate Attributes) will impact the assessment of our engineering students and programs, and will require us to:

- Identify each program's major learning objectives and include CEAB Graduate Attributes
- Create measurable assessment criteria/quality indicators for objectives and attributes
- Map these criteria to courses
- Identify assessment measures appropriate for the criteria
- Utilize the assessment outcomes for feedback and improvement

At the Graduate Level, the Faculty of Applied Science and Engineering offers programs in seven different graduate units. Each unit offers the research-based Master of Applied Science and Doctor of Philosophy degrees. All units, with the exception IBBME, offer a course-based Master of Engineering degree. IBBME offers a Master of Health Science degree in Clinical Engineering.

The Ontario Council of Graduate Studies (OCGS), the body that currently oversees Graduate Programs, is being phased out in 2010. Under the new *Quality Assurance Framework*, Graduate Programs need to be reviewed within 8-year cycles. Unlike our undergraduate degrees, there is no professional accreditation for our graduate degrees.

Our Proposed Process:

We propose to combine the cyclical reviews of Undergraduate and Graduate Programs with external reviews of our Departments and Institutes, fulfilling the following requirements:

- Undergraduate and Graduate cyclical program reviews within 8-year cycles (IQAPs)
- CEAB reviews within 6-year cycles (Accreditation)
- External reviews are timed to coincide with the end of term of the unit's head, normally conducted every five years but not to exceed ten years as per UofT Guidelines as of June 2008

For the Undergraduate Program Reviews, we propose to combine the assessment of the Undergraduate Degree Level Expectations with the new CEAB accreditation requirement of Graduate Attributes. We are confident that the 12 CEAB Graduate Attributes can be linked to the 6 UDLEs. For example, each UDLE could map to the following (CEAB attribute in brackets):

1. Depth and breadth of knowledge (1, 2, 3, 4, 5, 8, 9, 10, 11, 12)
2. Knowledge of methodologies (2, 3, 4, 5, 6, 11)
3. Application of knowledge (2, 3, 4, 10, 11)
4. Communication skills (7)
5. Awareness of limits of knowledge (2, 3, 4, 5, 9, 11)
6. Autonomy and professional capacity (6, 8, 10, 12)

The Self-Study for the External Review will then include a summary of the most recent CEAB accreditation material for the Undergraduate Programs along with the complete assessment of the Graduate Programs.

Next Steps:

The Faculty will establish a Working Group to propose further details for our reviews. In particular, the group will:

- Prepare an outline of the *Framework* for assessing, demonstrating and tracking the compliance of our undergraduate programs with the new CEAB graduate attributes

- Outline the linkage of CEAB Graduate Attributes to our UDLEs, including possible revision of UDLEs as appropriate. This will include a general approach for identifying, for each program, the link between program elements, Graduate Attributes and UDLEs
- Describe the Faculty governance processes for ensuring that Undergraduate and Graduate Program changes are consistent with UDLEs and GDLEs
- ***Report to Executive Committee on May 12, 2010***