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Report on the AU Task Force's 2018 consultation

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1. Introduction

1.1. The AU Task Force

In February 2017, the AU Task Force was established by the Executive Committee of the Accreditation Board with a mandate to:

- consider the definition of an AU in its present form (criteria 3.4.1.1) and to identify the advantages, disadvantages and ramifications of any definition change on existing criteria; and

- to envisage how curriculum content requirements could be linked to student outcomes/graduate attributes whatever system of AU counts is used.

This Task Force initially consisted of Graham Reader, Michael Isaacson, Matthew Oliver, Dan Candido, and Tom Tiedje. In July 2017, the Task Force membership was broadened to the current membership of seven individuals from regions across Canada. Members are:

- Bob Dony — Task Force leader
- Luigi Benedicenti — CEAB member
- Dan Candido — CEAB member
- Ray Gosine — CEAB member
- Andy Hrymak — NCDEAS member
- Matthew Oliver — Regulator/Admissions official representative
- Tom Tiedje — NCDEAS member

The Task Force also received much support and encouragement from:

- Ishwar Puri — Chair of NCDEAS
- Wayne MacQuarrie — Chair of CEAB
- Russ Kinghorn — President, Engineers Canada
- Stephanie Price — Acting CEO, Engineers Canada
- Graham Reader — CEAB member

In February 2018, the Task Force submitted their report which was received by both the Canadian Engineering Accreditation Board and the Engineers Canada Board. The report represents the deliverables set by the Task Force. The Task Force report included 4 recommendations:

1. Define a learning unit as an additional method for measuring curriculum.
2. Equate one learning unit as equal to 2.5 hours of learning time.
3. Consult with accreditation stakeholders on recommendations 1 and 2.
4. Continue the initiative to explore the linking of AUs to GAs.

Recognizing that stakeholders of accreditation would be affected by any changes to the AU definition the Task Force consulted with as many of those stakeholders as possible before making a final recommendation to the Board. The consultation focused on recommendations 1 and 2. This report is the outcome of that consultation process.

1.2. The Accreditation Unit

The Accreditation Unit (AU) was established in the 1990's, after the National Committee of Deans of Engineering and Applied Science (NCDEAS) officially requested changes in the CEAB annual report, specifically that "in all cases the requirements are to be met in terms of the absolute amount of instruction, not the proportion of a particular curriculum.[1]"

[1] An Armchair View of Engineering Accreditation in Canada J. D. Aplevich, FEC, P.Eng.

The definition of an AU is found at criterion 3.4.1.1. It currently reads as follows:

> *"Accreditation units (AU) are defined on an hourly basis for an activity which is granted academic credit and for which the associated number of hours corresponds to the actual contact time between the student and the faculty members, or designated alternates, responsible for delivering the program:*
>
> - *one hour of lecture (corresponding to 50 minutes of activity) = 1 AU*
> - *one hour of laboratory or scheduled tutorial = 0.5 AU*
>
> *This definition is applicable to most lectures and periods of laboratory or tutorial work. Classes of other than the nominal 50-minute duration are treated proportionally. In assessing the time assigned to determine the AU of various components of the curriculum, the actual instruction time exclusive of final examinations should be used.[2]"*

More recently, there have been increasing discussions about this measurement methodology as it has shortcomings in terms of newer education delivery approaches.

1.3. Consultation objectives

The primary objectives of the consultation on the AU Task Force report was to:

1. Inform stakeholders of an alternate curriculum measurement methodology being considered.
2. Investigate stakeholder reaction to the report recommendations.
3. Consolidate and synthesize stakeholder feedback with the objective of putting forward a list of recommendations for implementation.
4. Identify barriers to change if the report recommendations are adopted.
5. Develop a reasonable implementation plan that accommodates the diverse viewpoints of stakeholders.

As guiding principles, the consultation on the AU Task Force was intended to:

1. Be inclusive of all relevant stakeholder groups.
2. Be transparent.
3. Be procedurally fair.
4. Encourage feedback (both positive and constructive).

[2] 2017 CEAB Accreditation Criteria and Procedure, p. 18
https://engineerscanada.ca/sites/default/files/accreditation-criteria-procedures-2017.pdf

1. Scope and methodology

1.1. Consultation approach

In February, Engineers Canada approved a consultation plan which was implemented March 21 through to June 3, 2018. After considering industry-standard approaches to consultation in relation to the available time and resources to execute the plan, the consultation team used a focus group methodology accompanied by a general call for comment. Focus groups allowed the consultation team to focus on the specific questions of interest with targeted stakeholders of accreditation. Focus groups were largely conducted by webcasting technology but where time and budget resources allowed, face-to-face meetings were held.

To standardize the consultation meetings as much as possible, the planning team developed the following materials:

- An invitation to participate which describes the process by which stakeholder feedback will be collected, how it will be used, and that feedback will be summarized and fed back to stakeholders (Appendix A).
- The AU Task Force report.
- A presentation slide deck which will be used at every consultation (Appendix B).
- Engineers Canada web content to inform readers about the consultation process and outcomes.

Stakeholders were made aware of the consultation process through the Engineers Canada bi-weekly newsletter, the Accreditation Improvement Program (AIP) monthly email update, and the weekly update email from Engineers Canada's CEO. Additionally, a web page dedicated to the consultation was hosted on the Engineers Canada website.

The consultation period began with two introductory webinars. All stakeholders were invited to participate in the webinars which were recorded and posted on the Engineers Canada website and were publicly accessible. The webinars provided an overview of the process followed by the AU Task Force to:

- develop their report,
- highlight the recommendations contained within the report; and
- define the ways by which we will consult each stakeholder group

The English introductory webinar was held on April 5 with 26 participants. The French introductory webinar was held on April 16 with 6 participants.

All stakeholders were then invited to:

1. Participate in a 1-hour webinar or in-person meeting to provide feedback on the recommendations.
2. Submit written feedback.

1.2. Website statistics

Page/Item	Unique page views	Average time spent	Number of downloads
2018 Consultation on the AU Task Force Recommendations webpage	300	2m15s	n/a
Consultation de 2018 sur les recommandations du Groupe de travail sur les unites d'agrément (UA) webpage	50	3m	n/a
Report of the AU Task Force	n/a	n/a	84
Rapport du Groupe de travail sur les UA	n/a	n/a	9
AU Task Force introduction to the consultation webinar (YouTube video)	8	n/a	n/a
le webinaire d'introduction au processus de consultation du Groupe de travail sur les UA (YouTube video)	1	n/a	n/a
AU Task Force introduction to the consultation presentation (PowerPoint slides in .pdf)	n/a	n/a	24
Groupe de travail sur les UA : Consultation 2018 (PowerPoint slides in .pdf)	n/a	n/a	2

From March 21-June 15

1.3. Stakeholders

The following stakeholders were invited to participate in consultation meetings

- CEAB members (including the Policies and Procedures Committee)
- CEQB members
- Canadian Federation of Engineering Students (CFES)
- National Council of Deans of Engineering and Applied Science (including the Deans Liaison Committee)
- Executive Committee, Engineers Canada
- Engineering regulators' councils/Boards of examiners/Academic review committees
- National Admissions Officials Group (NAOG)

Given the diverse structure of each stakeholder group, the primary contact within each organization was invited to identify the name(s) of the individual(s) who were to be invited to participate in a consultation meeting.

1.4. Key questions asked of each stakeholder

Each stakeholder was asked to respond to the following questions:

1. Does the definition of the "Learning Unit" offer sufficient flexibility to measure curriculum content that is not actual contact time between student and faculty members?
2. Does the definition of the "Learning Unit compromise the quality of the engineering degree?
3. Do the recommendations affect your level of confidence in the established accreditation process?
4. Is the Learning Unit as equal to 2.5 hours of learning time appropriate?
5. If we were to implement these recommendations today, what are the unintended consequences? That is, if something could go wrong, what would it be?

2. Findings

2.1. List of stakeholders that provided feedback

Table 1 lists the stakeholders that provided feedback, the method by which feedback was provided, and the date it was received.

Table 1: List of stakeholders that provided feedback

Stakeholder	Feedback method	Date received
Organizations external to Engineers Canada		
Canadian Federation of Engineering Students (CFES)	Meeting notes, written	May 8, 2018
National Admissions Officials Group (NAOG)	Written	June 13, 2018
National Council of Deans of Engineering and Applied Science (NCDEAS)	Written	June 7, 2018
Engineers Canada committees		
CEAB	Meeting minutes, written	June 3, 2018
CEQB	Written	May 30, 2018
Executive Committee	Meeting notes, written	April 19, 2018
Group of previous AB Chairs	Written	May 22, 2018
Regulators*		
Engineers and Geoscientists New Brunswick	Meeting notes, written	June 6, 2018
Association of Professional Engineers and Geoscientists of Alberta	Written	May 30, 2018
Higher Education Institutions		
McGill University	Written	June 12, 2018
Queen's University	Written	April 13, 2018
University of Alberta	Written	May 30, 2018
York University	Written	May 12, 2018
Individuals		
Carol Jaeger, Associate Dean, Academic, UBC Faculty of Applied Science	Written	May 12, 2018

* The following regulators indicated that their feedback was captured in the NAOG response:
  Engineers and Geoscientists BC
  Engineers Geoscientists Manitoba
  Engineers Nova Scotia
  Engineers PEI
  Ordre des ingénieurs du Québec

2.2. Feedback themes

The accreditation stakeholder feedback received through the consultation process was reasonably consistent across respondents. After analysis, the Task Force identifies four primary themes:

1. Stakeholders anticipate that the Learning Unit, as described, has the potential to offer sufficient flexibility to measure curriculum content that is not actual contact time between student and faculty members.
2. There is general support from stakeholders to execute a Learning Unit verification project.
3. Several stakeholders expressed caution around the auditability of the Learning Unit as defined in the Task Force recommendations.
4. Several stakeholders expressed caution around implementing any approved changes too quickly. Some recommended establishing an upper limit on the number of courses to which the LU could be applied (some have suggested 10%).

Accreditation stakeholders also expressed feedback related to the CEAB's accreditation system but not directly related to the mandate of the AU Task Force. The authors have taken the liberty of reviewing and summarizing this feedback which could be used to inform future CEAB initiatives. It is the hope of the Task Force that the issues raised will be considered by the appropriate parties.

1. Several stakeholders expressed concern about the workload for students of a CEAB-accredited engineering education program. Some have linked workload to the mental wellbeing of students in CEAB-accredited engineering education programs.
2. That the CEAB should revalidate the minimum number of Accreditation Units (1,950) as required by criterion 3.4.6. This initiative is under discussion by the Policies and Procedures Committee of the CEAB.
3. General issue that faculty requirements for licensure in terms of specified AUs are restrictive.

3. Next steps

3.1. Recommendation to the CEAB

There is support for the Learning Unit recommendation from a number of stakeholders and no objection from others. It appears that the LU would address some of the concerns expressed about the limitation of current curriculum measurement methodologies. It is therefore the recommendation of the AU Task Force that further investigation be undertaken in the form of a pilot exercise. This exercise would seek to investigate the feasibility of using the LU in real-world situations and draw comparisons between the Learning Unit and the existing Accreditation Unit and k-factor curriculum measurement methodologies. The pilot will also help address some of the cautions expressed by some stakeholders. The pilot objectives and methods will be defined by the AU Task Force. Institutions from across the country who will be asked to respond to a formal call for volunteers.

Student learning time-based definitions of academic credit exist in other jurisdictions and institutions. The Task Force will undertake a deeper environmental scan to further understand how others have implemented this measure of curriculum content. Specifically, the examination of other jurisdictional approaches could address some of the cautions expressed by stakeholders related to the auditability of the LU.

4. Definitions

Accreditation Unit (AU): "Accreditation units (AU) are defined on an hourly basis for an activity which is granted academic credit and for which the associated number of hours corresponds to the actual contact time between the student and the faculty members, or designated alternates, responsible for delivering the program:

- one hour of lecture (corresponding to 50 minutes of activity) = 1 AU
- one hour of laboratory or scheduled tutorial = 0.5 AU

This definition is applicable to most lectures and periods of laboratory or tutorial work. Classes of other than the nominal 50-minute duration are treated proportionally. In assessing the time assigned to determine the AU of various components of the curriculum, the actual instruction time exclusive of final examinations should be used.[3]"

Accredited engineering program: An accredited engineering program consists of studies in engineering leading to a bachelor's degree that fulfills the academic requirement for licensure with Canada's engineering regulators.

Blended classes: Mix of traditional and online course delivery.

CEAB, AB: The Canadian Engineering Accreditation Board, or simply the Accreditation Board. Though referred to as a 'Board' the CEAB is technically a committee of the Board of Directors of Engineers Canada.

Engineers Canada Board: The Board of Directors of Engineers Canada.

Flipped classroom: An instructional method where the course material is available outside of the classroom (typically on-line) and the classroom time is spent engaging with this material where the instructor acts as a mentor or coach.

Higher education institution, HEI: A post-secondary institution, which would refer to an institution offering educational programming after high school.

K factor: One method for determining an equivalent measure in AU is a calculation on a proportionality basis. This method relies on the use of a unit of academic credit defined by the institution to measure curriculum content. Specifically, a factor, K, is defined as the sum of AU for all common and compulsory courses for which the computation was carried out on an hourly basis, divided by the sum of all units defined by the institution for the same courses.

Then, for each course not accounted for on an hourly basis, the number of AU is obtained by multiplying the units defined by the institution for that course by K.[4]

$$K = \frac{\Sigma \text{ AU for all common and compulsory courses for which the computation was carried out on an hourly basis}}{\Sigma \text{ units defined by the institution for the same courses}}$$

[3] 2017 CEAB Accreditation Criteria and Procedure, p. 18
https://engineerscanada.ca/sites/default/files/accreditation-criteria-procedures-2017.pdf
[4] 2017 CEAB Accreditation Criteria and Procedure, p. 19
https://engineerscanada.ca/sites/default/files/accreditation-criteria-procedures-2017.pdf

Mandate: The functional scope of the committee/task force approved by the CEAB.

Online courses: Courses where the interaction by the student is through the internet. Typically, this involves online course delivery methods such as web-based reading, multimedia presentations, and video lectures as examples. Interaction with the instructor could be through email, online chat rooms, etc. The course is structured so that a student does not have to be physically present at the institution.

Regulators: The provincial and territorial associations established under law to regulate the practice of professional engineering within their respective jurisdictions, and who are the members of Engineers Canada, as defined in the Articles of Continuance.

Task Force: For the purposes of this report, a task force is a subcommittee operating for a defined period with a specific task. Task forces may include members who are not members of the committee or Board that created the Task Force.

Work Plan: Briefly describes specific tasks to be undertaken during the year by a committee/task force and the deliverables expected upon completion of the tasks. Work plans are to be developed each year and are to be submitted to the CEAB for approval.

5. Appendices

Appendix A: Invitation to participate in the consultation (template)

[send via email from accredtiation@engineerscanada.ca*]*

DATE

NAME
TITLE
ORGANIZATION
CITY, PROV, POSTCODE

RE: Consultation on Engineers Canada's AU Task Force recommendations

Dear NAME,

At their February 28, 2018 meeting, the Engineers Canada Board instructed the Accreditation Board to consult stakeholders on the recommendations of the Accreditation Unit (AU) Task Force regarding methods to measure curriculum. **As a stakeholder of the accreditation system, ORGANIZATON NAME is invited to provide comments on the recommendations contained within the AU Task Force's report (attached).** The consultation period will be between March 21, 2018 and June 3, 2018.

Who should participate

Given the diverse structure of each provincial regulator, we invite you to identify the name(s) of the individuals with whom we should work to schedule a 1-hour session to be offered via webinar. The AU Task Force has identified engineering regulators' councils, boards of examiners, and/or academic review committees as potential participants in this process. However, there may be other individuals within your organization who should be invited.

Please respond to this email and provide the name, title, and email address of the individual(s) who would be best suited to participate in this session. You should also forward this email to those individuals as it contains important instructions and information.

How to participate

1. Introduction to the consultation process - webinar

Any individual within your organization who may be interested is invited to attend one of our scheduled introduction webinars. By clicking their preferred option below, participants will be provided within instructions on how to register:

- Thursday April 5, 2018: 1:00pm – 2:00 pm Eastern (English)
- Monday April 16, 2018: 1:00pm – 2:00 pm Eastern (French)

The introduction webinar will provide an overview of the report development process, highlight the recommendations contained within the report, and define the ways by which we will consult each stakeholder group. Any individual who is not able to participate in the live webinar will be able to access the webinar recording on the Engineers Canada website.

2. Webinar meeting with organization officials

We will work with the individuals you identify to schedule a 1-hour meeting held via webinar to collect their feedback on the AU Task Force's recommendations.

3. Submit written feedback

Stakeholders are invited to participate in the consultation through any of the means listed above. Additionally, you are invited to submit a formal written response. Written responses should be directed to accreditation@engineerscanada.ca or by mail to:

AU Task Force
c/o Mya Warken
Engineers Canada
300-55 Metcalfe St.
Ottawa, ON K1P 6L5

Written responses must be received by **May 30, 2018**

How your feedback will be used

Following each meeting, we will synthesize the feedback you have given and provide it for validation to our primary contact at your organization. All feedback from all stakeholders will be collected and presented to the AU Task Force, CEAB, and Engineers Canada Board of Directors. A summary of all feedback received will be circulated to stakeholders and posted on the Engineers Canada website.

Background

For over 50 years, the accreditation of engineering academic programs in Canada has ensured high standards in engineering education. Graduates of accredited programs meet the academic requirements for licensure. Since 1996, curriculum content has been measured in accreditation units (AU). An AU is a measurement of activity between the student and program instructor.

Feedback from some stakeholders is that the available methods of measuring curriculum may not accommodate non-traditional methods of teaching instruction and may stifle innovative instructional design.

In response to this feedback, the AU Task Force was struck to investigate and report back to the Accreditation Board and Engineers Canada Board.

On behalf of the AU Task Force, the Accreditation Board, and Engineers Canada, thank you for considering this invitation. Should you have any questions, please do not hesitate to contact me (lynn.villeneuve@engineerscanada.ca or at 1-877-408-9273 extension 226) or Mya Warken (mya.warken@engineerscanada.ca or at 1-877-408-9273extension 206).

Best regards,

Lynn Villeneuve, LLB, FEC (Hon.)
Practice Lead, Accreditation
Chef de pratique, Agrément

Appendix B: Consultation slide deck (sample)