# Questionnaire for Evaluation of an Engineering Program - Exhibit 1

**Submitted by:**

Name of Higher Education Institution

Program name

Date

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Questionnaire update: August 2022
For the 2024/2025 visit cycle

| Version | Document | Description of Changes |
|---|---|---|
| Questionnaire for Evaluation of an Engineering Program – Exhibit 1 Accreditation Visit Cycle 2020 - 2021) | EN_2020_Questionnaire_E1.docx | This document was re-vamped to reflect the CEAB's move toward a greater focus on GA/CI process.<br><br>**Graduate Attributes**<br><br>**Overall GA/CI Process:**<br>Under this heading, discuss how often a complete data set is collected and analyzed for each indicator for each graduate attribute.<br><br>**Organization and engagement:**<br>Under this heading, discuss the organizational structure for the measurement of graduate attributes. Discuss the roles and engagement of faculty members and engineering leadership in this structure. Provide a process diagram for the measurement of graduate attributes. Describe (or provide relevant documentation) the operational processes for: selecting the course (or other learning activity) to be assessed, mapping the course (or other learning activity) to the instructional level (e.g. I/D/A), determining the frequency of assessment, selecting the indicators, selecting the assessment tools, and analyzing the data including determining the threshold for change.<br><br>Refer to Table 3.1.1a to complete the next section. A single course (or other learning activity) may be used for more than one Graduate Attribute, if applicable.<br><br>**Curriculum maps:** For each graduate attribute, select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss:<br>the rationale for the selection of the course (or other learning activity) for assessment. Include the justification for how the measurements are distributed over the semesters of the program;<br>the specific characteristics that justify the assessment of the course (or other learning activity) at the expected instructional level (e.g. I/D/A).<br><br>**Indicators:** For each graduate attribute, select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss:<br>• the indicator(s) that apply to each course (or other learning activity);<br>• the rationale behind the selection of the indicators for the attribute; |

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| | | • the justification that the indicators are unique to the attribute.<br><br>**Assessment tools:** For each graduate attribute, select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss the direct and/or indirect tool(s) (exam, rubric, report, survey, etc.) used for data collection.<br><br>**Assessment results:** For each graduate attribute:<br>a- Provide the results of the most recent learning activity assessments of the extent to which graduates acquire the attribute. Illustrate student performance level(s) for each measurement.<br>b- Discuss the conclusions you have drawn from all of the data you've collected. Discuss:<br>• the time period over which the data has been collected;<br>• whether the data collected and analyzed to-date is complete enough to enable decision making or whether more data needs to be collected;<br>• how the level of student performance relative to program-expectations is addressed;<br>• overall, what conclusions have been drawn from the analysis of the data.<br><br>**Continual Improvement**<br><br>**Improvement process:**<br>Under this heading, discuss the organizational structure of the continual improvement process. Discuss the roles and engagement of faculty members and engineering leadership in both program-specific and faculty-wide changes. Provide a process diagram (or similar) for continual improvement. Describe the process for: data review and interpretation, internal and external consultation, decision making, and responsibility for actions. Provide timelines for each stage of the process.<br><br>**Stakeholder engagement:**<br>Under this heading, describe which stakeholders are involved in decision-making for program improvement, including the rationale for the selection of those involved. Additionally, provide a description of the consultation process.<br><br>**Improvement actions (curriculum):**<br>Under this heading, explain how the decision to act (or not) is triggered based on graduate attribute data analysis. Describe the kinds of actions that are considered at the faculty and at the program levels. For those decisions that were driven by GA data analysis, describe 3-5 examples. |

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| | | Do not describe incremental course-level actions that are routinely implemented by instructors.<br><br>**Improvement actions (GA/CI processes):**<br>Under this heading, describe any actions that have been implemented to improve the overall GA/CI process (what has worked? what has not worked in terms of graduate attribute data collection and continual improvement actions?).<br><br>**(optional) Improvement actions (non-GA data):**<br>Under this heading, describe any other improvements that were driven by non-GA data analysis. |

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**Added text**

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# 3.1 Graduate Attributes

The higher education institution must demonstrate that the graduates of a program possess the attributes under the following headings. The attributes will be interpreted in the context of candidates at the time of graduation. It is recognized that graduates will continue to build on the foundations that their engineering education has provided.

Instructions for criterion 3.1
Please complete Tables 3.1.1 to 3.1.2 for the program to be accredited by using the workbook files included with this package. In addition, complete the following information:

**Overall GA/CI Process:**
Under this heading, discuss how often a complete data set is collected and analyzed for each indicator for each graduate attribute.

{Response text}

**Organization and engagement:**
Under this heading, discuss the organizational structure for the measurement of graduate attributes. Discuss the roles and engagement of faculty members and engineering leadership in this structure. Provide a process diagram for the measurement of graduate attributes. Describe (or provide relevant documentation) the operational processes for: selecting the course (or other learning activity) to be assessed, mapping the course (or other learning activity) to the instructional level (e.g. I/D/A), determining the frequency of assessment, selecting the indicators, selecting the assessment tools, and analyzing the data including determining the threshold for change.

{Response text}

Refer to Table 3.1.1a to complete the next section. A single course (or other learning activity) may be used for more than one Graduate Attribute, if applicable.

**Curriculum maps:** For each graduate attribute, select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss:

- the rationale for the selection of the course (or other learning activity) for assessment. Include the justification for how the measurements are distributed over the semesters of the program;
- the specific characteristics that justify the assessment of the course (or other learning activity) at the expected instructional level (e.g. I/D/A).

**Indicators:** For each graduate attribute select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss:

- the indicator(s) that apply to each course (or other learning activity);
- the rationale behind the selection of the indicators for the attribute;
- the justification that the indicators are unique to the attribute.

**Assessment tools:** For each graduate attribute, select 3-5 courses (or other learning activity) from Table 3.1.1a. For each course (or other learning activity) where data is collected to assess the extent to which graduates acquire the attribute, discuss the direct and/or indirect tool(s) (exam, rubric, report, survey, etc.) used for data collection.

**Assessment results:** For each graduate attribute:

a- Provide the results of the most recent learning activity assessments of the extent to which graduates acquire the attribute. Illustrate student performance level(s) for each measurement.

b- Discuss the conclusions you have drawn from all of the data you've collected. Discuss:

- the time period over which the data has been collected;
- whether the data collected and analyzed to-date is complete enough to enable decision making or whether more data needs to be collected;
- how the level of student performance relative to program-expectations is addressed;
- overall, what conclusions have been drawn from the analysis of the data.

# Graduate attribute # 1 – A knowledge base for engineering

**Canadian Engineering Accreditation Board definition:**
Demonstrated competence in university level mathematics, natural sciences, engineering fundamentals, and specialized engineering knowledge appropriate to the program.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 2 – Problem analysis

**Canadian Engineering Accreditation Board definition:**
An ability to use appropriate knowledge and skills to identify, formulate, analyze, and solve complex engineering problems in order to reach substantiated conclusions.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 3 – Investigation

**Canadian Engineering Accreditation Board definition:**
An ability to conduct investigations of complex problems by methods that include appropriate experiments, analysis and interpretation of data, and synthesis of information in order to reach valid conclusions.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 4 – Design

**Canadian Engineering Accreditation Board definition:**

An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 5 – Use of engineering tools

**Canadian Engineering Accreditation Board definition:**

An ability to create, select, apply, adapt, and extend appropriate techniques, resources, and modern engineering tools to a range of engineering activities, from simple to complex, with an understanding of the associated limitations.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 6 – Individual and team work

**Canadian Engineering Accreditation Board definition:**
An ability to work effectively as a member and leader in teams, preferably in a multi-disciplinary setting.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 7 – Communication skills

**Canadian Engineering Accreditation Board definition:**

An ability to communicate complex engineering concepts within the profession and with society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 8 – Professionalism

**Canadian Engineering Accreditation Board definition:**
An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public and the public interest.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 9 – Impact of engineering on society and the environment

**Canadian Engineering Accreditation Board definition:**

An ability to analyze social and environmental aspects of engineering activities. Such ability includes an understanding of the interactions that engineering has with the economic, social, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions; and the concepts of sustainable design and development and environmental stewardship.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 10 – Ethics and equity

**Canadian Engineering Accreditation Board definition:**
An ability to apply professional ethics, accountability, and equity.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 11 – Economics and project management

**Canadian Engineering Accreditation Board definition:**
An ability to appropriately incorporate economics and business practices including project, risk, and change management into the practice of engineering and to understand their limitations.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# Graduate attribute # 12 – Life-long learning

**Canadian Engineering Accreditation Board definition:**
An ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge.

**Curriculum maps:**

{Response text}

**Indicators:**

{Response text}

**Assessment tools:**

{Response text}

**Assessment results:**

{Response text}

# 3.2 Continual improvement

Engineering programs are expected to continually improve. There must be processes in place that demonstrate that program outcomes are being assessed in the context of the graduate attributes, and that the results are applied to the further development of the program.

Instructions for criterion 3.2:
Please complete the following information.

## 3.2.1 Improvement process

Under this heading, discuss the organizational structure of the continual improvement process. Discuss the roles and engagement of faculty members and engineering leadership in both program-specific and faculty-wide changes. Provide a process diagram (or similar) for continual improvement. Describe the process for: data review and interpretation, internal and external consultation, decision making, and responsibility for actions. Provide timelines for each stage of the process.

{Response text}

## 3.2.2 Stakeholder engagement

Under this heading, describe which stakeholders are involved in decision-making for program improvement, including the rationale for the selection of those involved. Additionally, provide a description of the consultation process.

{Response text}

## 3.2.3 Improvement actions

**Curriculum**
Under this heading, explain how the decision to act (or not) is triggered based on graduate attribute data analysis. Describe the kinds of actions that are considered at the faculty and at the program levels. For those decisions that were driven by GA data analysis, describe 3-5 examples.

Do not describe incremental course-level actions that are routinely implemented by instructors.

{Response text}

### GA/CI processes

Under this heading, describe any actions that have been implemented to improve the overall GA/CI process (what has worked? what has not worked in terms of graduate attribute data collection and continual improvement actions?).

{Response text}

### (optional) Non-GA data

Under this heading, describe any other improvements that were driven by non-GA data analysis.

{Response text}