# Quebec Engineering Competition

Competition By-Laws
Revised on September 16, 2018

# Table of Contents

# 1 Eligibility

## 1.1 Qualifying

**1.1.1** To represent their university, participants, teams, and projects must qualify through a competition or selection process deemed appropriate by the member association of the QCESO that represents that university.

**1.1.2** The eligibility of each participant, team, and project is determined by the Vice-President Competitions according to this document's directives.

## 1.2 Participants

**1.2.1** Participants must be registered in an accredited engineering program (undergraduate) in a Quebec university whose student association is a member of the QCESO at the time they register for the Quebec Engineering Competition, with the following exceptions:

**1.2.1.a** In the Innovative Design competition, at least two (2) participants must be registered undergraduate students at the time of registration. The other members of the team may be graduates of a Quebec engineering program who've completed their studies in the year prior to the competition.

**1.2.1.b** for the Graduate Research Presentation, students must be enrolled in a graduate program at the time they register for the Quebec Engineering Competition.

**1.2.2** Participants in the Quebec Engineering Competition cannot be registered in more than one competition during the event.

## 1.3 Projects

**1.3.1** Only original projects developed by the participants can be presented. Original projects cannot have been presented at the AEC (Atlantic Engineering Competition), QEC (Quebec Engineering Competition), OEC (Ontario Engineering Competition) or WECC (Western Canada Engineering Competition) in previous years and cannot have an approach, solution, or application that is clearly shared by a previous project.

**1.3.2** Work completed while employed by a company is admissible as long as it is accompanied by a letter of authorization in which the employer approves the presentation of that work. This letter must be dated less than thirty (30) days prior to the start of the competition.

## 1.4 Substitutions

**1.4.1** If a participant is unable to be present at the competition for medical, personal (death, etc.), or any other reason deemed legitimate by the Vice-President Competitions, a replacement can be selected.

**1.4.2** Replacements must attend the same university as the original team.

**1.4.3** Anyone acting as a replacement must be eligible as a competitor according to sections 1.1 and 1.2.

**1.4.4** If an entire team is unable to be present at the competition for medical, personal (death, etc.), or any other reason deemed legitimate by the Vice-President Competitions, the QCESO member association for that team can select a new team for the competition.

# 2 Judging

## 2.1 Selection of Judges

**2.1.1** Judges are chosen by the organizers based on their experience and training.

**2.1.2** Each competition will have at least three (3) judges, one of which will be appointed as Primary Judge by the Vice-President Competitions for the event

**2.1.3** The primary judge represents the other judges and participates in a selection committee that determines the winners for special prizes (when applicable).

## 2.2 Prizes

**2.2.1** Judges will award prizes in each competition. Prizes will be determined using the evaluation criteria for each competition.

**2.2.2** The evaluation criteria used in each competition are intended to evaluate participants' abilities and knowledge.

**2.2.3** Before the start of the competition, the regulations will be explained to the event's judges to ensure they understand the criteria and techniques.

**2.2.4** Judges must complete their evaluations of each participant in a just, equitable, and consistent manner.

**2.2.5** In the event of a tie, judges will deliberate to determine a winner among the tied teams. If the judges are unable to come to a consensus through their deliberations, the winner will be determined by a majority vote. In the event of a tied vote, the primary judge has the deciding vote.

**2.2.6** Judges' decisions are final.

## 2.3 Special Prizes

**2.3.1** Special prizes are awarded by the judges according to specific criteria for each category.

**2.3.2** The categories for special prizes and the criteria for each of them are determined by the organizing committee.

**2.3.3** The list of special prizes must be announced no later than 30 days before the opening of the CEQ.

# 3 Logistics

## 3.1 Competition Directors

**3.1.1** The Vice-President Competitions must appoint a director for each competition. The director is responsible for the preparations and proper functioning of that competition.

## 3.2 Time

**3.2.1** Each competition includes specific time constraints, as given in the competition descriptions.

**3.2.2** Participants will be told how much time they have left during their presentation and question periods.

**3.2.3** In the event that a participant experiences technical difficulties during their presentation (burnt-out lightbulb in an overhead projector, power outage, etc.), the competition director will provide them with additional time to resolve the issue, unless it is determined that the problem was caused by the participant's lack of preparation.

## 3.3 Equipment and Facilities

**3.3.1** In the event that participants must provide their own equipment, competitors will be so informed at least fourteen days (336 hours) before the competition.

**3.3.2** In the event that a team doesn't have this equipment, the committee will provide them with the equipment as long as the delegation makes their request at least seven days (168 hours) before the event is to be held.

## 3.4 Start of the Competition

**3.4.1** The Quebec Engineering Competition officially opens at 6:00 p.m. on the first day of the event. All of the submission deadlines given for the committee or participants are in reference to this time.

## 3.5 Bilingualism

**3.5.1** All written communications will be sent to delegations in French and English simultaneously. Any additional elements that are essential to the competition must be explained in both French and English. The director of each competition must ensure the understanding of each team before the competition begins. All written translation must be done by a professional or be of a professional quality.

**3.5.2** In the event of any differences of interpretation between French and English versions, the original version takes precedence.

# 4 Decisions

## 4.1 Appeals

**4.1.1** Decisions by the Vice-President Competitions can be contested.

**4.1.2** The decision being contested is brought to the organizing committee for re-evaluation.

**4.1.3** The organizing committee's decision is final.

# 5 Competitions

## 5.1 Consulting

**5.1.1** In this competition, participants have limited time to develop a solution to the problem presented to them. The problem can be related to engineering or to its role in society. Participants will have to draw on the technical understanding of engineering or knowledge of engineering's impact on the environment, culture, economy, and society that they've acquired through their studies. Participants' communication skills will also be evaluated.

**5.1.2** Registration Criteria

**5.1.2.a** Teams consist of a maximum of four (4) eligible participants.

**5.1.3** Prior to the Competition

**5.1.3.a** Seven days (168 hours) before the competition, each competitor will receive an e-mail presenting the competition's main themes.

**5.1.3.b** These documents will also be published on the competition's official website.

**5.1.3.c** Competitors are responsible for ensuring they have received this information.

**5.1.4** Design Phase

**5.1.4.a** The time allocated to develop a solution varies between four (4) and eight (8) hours (as determined by the organizers).

**5.1.4.b** The problem will first be presented before all of the participants and judges. They will then have time to pose questions regarding the problem.

**5.1.4.c** Participants must develop a solution to the problem and prepare a presentation that they will then give, as well as a written report in the language of their choice, French or English.

**5.1.4.d** Participants are allowed to pose questions to the competition director during this time. All questions and their answers will be made available to all of the teams and judges.

**5.1.4.e** At the end of the design phase, participants must submit a copy of their presentation and report to the competition director.

**5.1.4.f** The organizing committee is responsible for translating the reports, if necessary, to make sure they can be understood by all of the competition's judges.

**5.1.4.g** All team members must be present at the competition in person. Working at a distance is prohibited.

**5.1.4.h** All external communications are strictly prohibited, even for the purpose of receiving information related to the project. The only authorized communications are with members of the organizing committee.

**5.1.5** Presentation of Solutions

**5.1.5.a** The time allocated for presentations varies from 15 to 20 minutes (as determined by the organizers). Judges can ask questions during the presentation. There is no question period following the presentation.

**5.1.5.b** Teams must explain their solution to the judges.

**5.1.5.c** The order of presentations is determined at random.

**5.1.5.d** The order of presentations will be announced one half-hour before the presentations begin.

**5.1.5.e** All teams must be present for this announcement.

**5.1.5.f** Teams are prohibited from changing their position in the order of presentations.

**5.1.5.g** Following the presentations, the three teams with the highest scores, according to the evaluation grid, will be called back in for a 15 minute question period to determine the winners.

**5.1.6** Material Provided by the Organization

**5.1.6.a** The following equipment will be provided to competitors during the development phase for their solution:

    1 A private design space with at least one table
    2 Paper and pencils/pens for writing
    3 Access to wireless internet

**5.1.6.b** During their presentation, teams will be provided with the following equipment:

    1 A digital projector,
    2 A computer containing a copy of the team's presentation.

**5.1.7** Material to be Brought by Participating Teams

1 Results of any research done by the team's members prior to the competition.
2 Books, course notes, or any other reference documents.
3 Portable computers (limit of one (1) per participant).

**5.1.8** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| Solution | /50 |
| Report | /15 |
| Presentation | /20 |
| Innovation | /15 |
| Penalty for failing to respect intellectual property | -50 |
| Penalty for not submitting on time | -50 |
| Total | 100 |

## 5.2 Scientific Communication

**5.2.1** In this competition, participants must describe the operation of a complex technical device or process in clear language that could be understood by the general population. Presentations will be evaluated for the quality of research, ability to explain concepts, presentation, interest shown by the audience, and the use of audiovisual equipment.

**5.2.2** Registration Criteria

**5.2.2.a** Teams consist of a maximum of two (2) eligible participants.

**5.2.3** Prior to the Competition

**5.2.3.a** Teams must submit their proposed presentation when registering.

1 The proposed presentations will be reviewed by the Vice-President Competitions to determine their eligibility.
2 Proposed presentations must include a description of the presentation's subject of at most 200 words.

**5.2.3.b** Teams must submit a summary of no more than 200 words for their presentation at least three days (72 hours) prior to the competition. This summary will be evaluated.

**5.2.3.c** The digital file for the visual presentation (PowerPoint or other) must be sent to the Vice-President Competitions at least three days (72 hours) prior to the start of the competition.

1 Participants are responsible for ensuring that the format of their presentation is compatible with the available computer.

**5.2.3.d** The competition will first be presented to all of the participants and judges. They will then have time to pose questions about the competition.

**5.2.4** Presentations

1 Each team must make a twenty (20) minute presentation, followed by five (5) minutes of questions from the judges.

2 The order of presentations will be determined at random.

3 The order of presentations will be announced one half-hour before the start of the presentations.

4 All teams must be present for this announcement.

5 Teams are prohibited from changing their position in the order of presentations.

**5.2.5** Material Provided by the Organization

1 A digital projector
2 A computer

**5.2.6** Material to be Brought by Participating Teams

1 Any material that the team needs for its presentation, including photos or schematics, as well as models or prototypes.

**5.2.7** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| **Introduction to the subject** | **/10** |
| Clear presentation and explanation of the subject | 5 |
| Interest generated in the subject | 5 |
| **Critical Analysis** | **/40** |
| Accuracy of the content | 10 |
| Clarity and simplification of complex information / popularization | 15 |
| Analysis of external factors (environment, social, economic, etc.) | 15 |
| **Presentation** | **/40** |
| Visual aids; use and relevance | 15 |
| Voice, articulation, rate of speech | 10 |
| Eloquence, charisma, and interest generated by the presenters | 10 |
| Appropriate level of language | 5 |
| **Written summary** | **/10** |
| Motivation for choosing the presentation subject and introduction | 3 |
| Interest and complexity of the subject | 3 |
| Addressed important aspects | 4 |
| **Penalties*** | **Maximum -10** |
| **Total** | **100** |

*Penalties:

- 1 point for every three different spelling or grammar mistakes in the presentation or summary.
- 1 point for every 10 words over the maximum in the summary. *Microsoft Word*'s integrated word counter will be used.
- 2 points for each day a submission is late.
- 1 point per minute over time during the presentation, up to a maximum of 5 points.

## 5.3 Innovative Design

**5.3.1** In this competition, participants design a product, service, or marketable and saleable process that is not currently available. Projects will be evaluated for their originality, market analysis, economic and technical feasibility, profitability, and presentation.

**5.3.2** Registration Criteria

**5.3.2.a** Teams consist of a maximum of four (4) eligible participants.

**5.3.2.b** At least two (2) participants must be registered undergraduate students at the time of registration. The other members of the team may be graduates of a Quebec engineering program who've completed their studies in the year prior to the competition.

**5.3.3** Prior to the Competition

**5.3.3.a** Teams must submit their proposed presentation when registering (as a preliminary version). Teams must submit a summary for their design at least three (3) days prior to the competition.

1 Proposed presentations will be reviewed by the competition director to determine their eligibility. It is possible to contact the director before the given date to get an opinion on the eligibility of a project.
2 The proposed presentation and summary must include a description of the presentation's subject of not more than 200 words.

**5.3.3.b** Teams must prepare an exhibition or kiosk to be presented to the general public.

**5.3.3.c** Teams will have one hour to put up their kiosk on the first day of the presentation.

**5.3.3.d** If teams need a table that is larger than 0.75 m x 1.5 m, they must inform the competition director at the latest 14 days (336 hours) before the start of the competition.

**5.3.4** Exhibition Period

**5.3.4.a** The exhibition or kiosk will be installed for the duration of the competition (according to the schedule set by the organizing committee).

**5.3.4.b** At least one member of the team must be present during opening hours for the public.

**5.3.5** Presentation

**5.3.5.a** Evaluations will include a twenty (20) minute presentation followed by a ten (10) minute question period.

**5.3.5.b** Presentations must include the following points: marketing, efficiency, technical feasibility, production, the economic aspect, and applications that go beyond the original design's intentions.

**5.3.5.c** The order of presentations will be determined at random.

**5.3.5.d** The order of presentations will be announced fifteen (15) minutes before the presentations begin.

**5.3.5.e** All of the teams must be present for this announcement.

**5.3.5.f** Teams are prohibited from changing their position in the order of presentations, unless otherwise informed by the competition director.

**5.3.6** Material Provided by the Organization

1 A table of 0.75m x 1.5m (30 in. x 60 in.).
2 A dedicated 110V source of electricity for each team.

**5.3.7** If teams want any other material to be provided by the organization, they can make such a request to the competition director up to 14 days (336 hours) before the competition. The director will decide whether or not the material can be provided.

**5.3.8** Material to be Brought by Participating Teams

1 Competitors can bring any resources they deem necessary for this competition.
2 In the event that a team wants to bring any dangerous chemicals (flammable, under pressure, corrosive, etc.) or dangerous material (sharp, high voltage, etc.), a detailed list must be submitted with the design summary (see 5.3.3.a)

**5.3.9** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| **Project** | **/70** |
| Justification for the design | 15 |
| Environmental and social impacts | 10 |
| Economic feasibility | 10 |
| Technical feasibility | 10 |
| Innovation | 25 |
| **Presentation** | **/25** |
| Visual aids | 10 |
| Voice and articulation | 7.5 |
| Time management | 7.5 |
| **Written summary** | **/5** |
| **Total** | **100** |

Penalty                                                                 -40 %

- -4 points per minute over time for the presentation (maximum of 20 points)
- -2 points for each spelling or grammar mistake on the poster or in the presentation (maximum of 20 points)
- Any written summaries submitted late, according to the process established in section 5.3.3.a, will be given a score of zero

## 5.4 Research presentation – Graduates

**5.4.1** In this competition, participants from graduate programs present a Master's or Doctoral project. This competition takes place in two parts: a poster presentation to the general public and judges, followed by an oral presentation before a panel of judges. The presentations and projects will be evaluated for the simplicity of their explanations, the project's innovation, the clarity of the presentation, and technical feasibility. The quality of visual aids will also be evaluated.

**5.4.2** Registration Criteria

**5.4.2.a** Teams consist of a maximum of two (2) eligible participants.

**5.4.2.b** Students must be registered in a graduate program at an engineering school in Quebec.

**5.4.3** Prior to the Competition

**5.4.3.a** Teams must submit their proposed presentation when registering.

**5.4.3.b** Teams must submit a 300 word summary for their project at least 14 days (336 hours) prior to the competition.

**5.4.3.c** The proposed presentation will be evaluated by the competition director to determine its eligibility.

**5.4.3.d** The visual presentation, such as a PowerPoint, must be sent to the competition director before presentations begin.

**5.4.3.e** Participants are responsible for ensuring that the format of their presentation is compatible with the available computer.

**5.4.4** Poster Presentation

**5.4.4.a** Teams must present an academic poster to the public.

**5.4.4.b** The poster must respect the format of 90cm wide and 135 cm tall and be written in either French or English.

**5.4.4.c** Teams must describe their project during an interactive oral presentation that lasts at most five (5) minutes, followed by three (3) minutes of questions from the judges.

**5.4.4.d** Material aids (simulation, demonstration, parts, etc.) are optional but recommended.

**5.4.4.e** The order of presentations will be determined at random.

**5.4.4.f** The order of presentations is announced individually by the competition director throughout the day of presentations.

**5.4.4.g** Teams are required to have at least one member present at all times during the competition.

**5.4.4.h** Material Provided by the Organization

> 1 A table that is 0.75m x 1.5m (30 in. x 60 in.)
> 2 A dedicated 110V source of electricity
> 3 A support for the poster

**5.4.5** Presentation to the Judges

**5.4.5.a** Teams must complete a presentation of no more than fifteen (15) minutes, followed by ten (10) minutes of questions from the judges.

**5.4.5.b** The judges will be different than those present during the poster presentation.

**5.4.5.c** The order of presentations will be determined at random and will be announced thirty (30) minutes before presentations begin.

**5.4.5.d** Teams must be present for this announcement.

**5.4.5.e** Teams are prohibited from changing their position in the order of presentations.

**5.4.5.f** Material Provided by the Organization

> 1 A digital projector
> 2 A computer
> 3 A table

**5.4.5.g** Material to be Brought by Participating Teams

> 1 Any electronic documents (including the presentation) saved on a storage device; competitors are responsible for checking with the organizers to make sure the format of their digital documents is compatible with the available computer.
> 2 All other material that the team will need for its presentation, including photos or schematics, as well as models or prototypes.

**5.4.6** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| **Poster - Project** | **/10** |
| **Poster - Presentation** | **/10** |
| **Presentation to the Judges - Project** | **/50** |
| Innovation | 15 |
| Grasp of the issue | 10 |
| Quality of the methodology and solution | 15 |
| Scientific benefits | 5 |
| Precision of objectives and results | 5 |
| **Presentation to the Judges – Presentation** | **/30** |
| Communication (eloquence, speed, popularization) | 20 |
| Visual presentation | 10 |
| **Penalty for going over time (-4 pts per minute over)** | **Maximum -20** |
| **Penalty for spelling and grammar mistakes (-2 pts per error)** | **Maximum -20** |
| **Total** | **100** |

## 5.5 Senior Design

**5.5.1** In this competition, participants must work on a project revealed on the day of the competition itself. Evaluation criteria are based on the oral presentation, the quality of the report, originality, respect of the constraints given, efficiency, and the system's feasibility.

**5.5.2** Registration Criteria

**5.5.2.a** Teams consist of a maximum of four (4) eligible participants.

**5.5.3** Prior to the Competition

**5.5.3.a** Seven days (168 hours) prior to the competition, each competitor will receive an e-mail that includes a list of the theoretical aspects covered by the problem that they'll need to understand to complete the project.

**5.5.3.b** These documents will also be published on the competition's official website.

**5.5.3.c** Participants are responsible for ensuring they've received this information.

**5.5.4** Design Phase

**5.5.4.a** The time allocated to develop a solution varies between eight (8) and twelve (12) hours (as determined by the organizers).

**5.5.4.b** The problem will first be presented before all of the participants and judges. They will then have time to pose questions regarding the problem.

**5.5.4.c** Participants must develop a solution to the problem and prepare a presentation that they will then give.

**5.5.4.d** At the end of the design phase, participations must submit their presentation and the solution they've prepared to the competition director.

**5.5.4.e** Participants are allowed to pose questions to the competition director during this phase. All questions and their answers will be made available to all of the teams and judges.

**5.5.4.f** Teams are prohibited from using any external sources during the design phase.

**5.5.5** Presentation of Solutions

**5.5.5.a** The time allocated to each oral presentation is ten (10) minutes, followed by a maximum of five (5) minutes for questions from the judges.

**5.5.5.b** Oral presentations must describe the design, the final solution, and the process for arriving at it.

**5.5.5.c** The order of presentations will be determined at random.

**5.5.5.d** The order of presentations will be announced one half-hour before presentations begin.

**5.5.5.e** Teams must be present for this announcement.

**5.5.5.f** Teams are prohibited from changing their position in the order of presentations.

**5.5.6** Material Provided by the Organization

**5.5.6.a** The following equipment will be provided to competitors during the design phase:

1 A design area that is at least 2.43 m by 2.43 m (8 feet by 8 feet)
2 Paper and pencils/pens for writing
3 A source of electricity for each team
4 The necessary tools and equipment to complete their design
5 The necessary materials to build their solution

**5.5.6.b** Teams will be provided with the following equipment for their presentation:

1 Digital projector
2 Computer with a copy of the team's presentation
3 Table
4 The solution developed by the team

**5.5.7** Material to be Brought by Participating Teams

1 Books, course notes, or any other reference documents.
2 A storage device that the team can keep so they have a copy of their presentation after the design phase; competitors are responsible to check with the organizers to make sure the format of their electronic data is compatible with the available computers.
3 A portable computer to prepare their presentation

**5.5.8** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| Presentation | /35 |
| Trials | /115 |
| Total | 150 |

## 5.6 Junior Design

**5.6.1** In this competition, participants must work on a project unveiled on the day of the competition itself. Projects will be evaluated on the originality of the design and prototype, team spirit, the presentation, and the prototype's performance.

**5.6.2** Registration Criteria

**5.6.2.a** Teams consist of a maximum of four (4) eligible participants who've completed no more than 59 credits in their undergraduate engineering program at the time of their registration. A digital copy of each student's transcript will have to be provided to the organizing committee to confirm their eligibility.

**5.6.3** Prior to the Competition

**5.6.3.a** Seven days (168 hours) prior to the competition, each competitor will receive an e-mail that includes a list of the theoretical aspects covered by the problem that they'll need to understand to complete the project.

**5.6.3.b** These documents will also be published on the competition's official website.

**5.6.3.c** Participants are responsible for ensuring they've received this information.

**5.6.4** Design Phase

**5.6.4.a** The time allocated to develop a solution varies between four (4) and eight (8) hours (as determined by the organizers).

**5.6.4.b** The problem will first be presented before all of the participants and judges. They will then have time to pose questions regarding the problem.

**5.6.4.c** Participants must develop a solution to the problem and prepare a presentation which they will then give.

**5.6.4.d** At the end of the design phase, participants must submit the presentation and solution they've prepared to the competition director.

**5.6.4.e** Participants are allowed to pose questions to the competition director during this phase. All questions and their answers will be made available to all of the teams and judges.

**5.6.4.f** Teams are prohibited from using any external sources during the design phase.

**5.6.5** Presentation

**5.6.5.a** The time allocated to each oral presentation is between five (5) and ten (10) minutes (as determined by the organizers), followed by a maximum of five (5) minutes for questions from the judges.

**5.6.5.b** Oral presentations must describe the design, the final solution, and the process for arriving at it.

**5.6.5.c** The order of presentations will be determined at random.

**5.6.5.d** The order of presentations will be announced one half-hour before presentations begin.

**5.6.5.e** Teams must be present for this announcement.

**5.6.5.f** Teams are prohibited from changing their position in the order of presentations, unless otherwise informed by the competition director.

**5.6.6** Material Provided by the Organization

**5.6.6.a** The following equipment will be provided to competitors during the design phase:

1 A design area that is at least 2.43 m by 2.43 m (8 feet by 8 feet)
2 Paper and pencils/pens for writing
3 A source of electricity for each team
4 The necessary tools and equipment to complete their design
5 The necessary materials to build their solution

**5.6.6.b** Teams will be provided with the following equipment for their presentation:

1 A digital projector
2 A computer with a copy of the team's presentation
3 A table
4 The solution developed by the team

**5.6.7** Material to be Brought by Participating Teams

1 A storage device that the team can keep so they have a copy of their presentation after the design phase; competitors are responsible to check with the organizers to make sure the format of their electronic data is compatible with the available computers.
2 A portable computer to prepare their presentation

**5.6.8** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| Quality of the presentation | /10 |
| Research and development | /5 |
| Originality and Innovation of the Design | /10 |
| Trials | /50 |
| Total | 75 |

## 5.7 Re-Engineering

**5.7.1** In this competition, participants must work on improving an object from everyday life that is unveiled on the day of the competition itself. Projects will be evaluated according to the originality of the design, team spirit, the presentation, and the quality of the report.

**5.7.2** Registration Criteria

**5.7.2.a** Teams consist of a maximum of two (2) eligible participants.

**5.7.3** Design Phase

**5.7.3.a** The time allocated for the development of a solution varies from four (4) to eight (8) hours (as determined by the organizers).

**5.7.3.b** Four (4) problems are first presented before all of the participants and judges. They then have time to ask questions regarding these problems.

**5.7.3.c** Participants must develop solutions for these problems and prepare a presentation that they will then have to give, as well as a report in the language of their choice, French or English. The first case is obligatory. Participants will then have to choose another case from among the remaining three.

**5.7.3.d** Participants are allowed to pose questions to the competition director during this phase. All questions and their answers will be made available to all of the teams and judges.

**5.7.3.e** At the end of the design phase, participants must submit a copy of their presentation and report to the competition director.

**5.7.3.f** The organizing committee is responsible for translating the reports, if necessary, to make sure they can be understood by all of the competition's judges.

**5.7.4** Presentation of Solutions

**5.7.4.a** The time allocated for presentations varies from fifteen (15) to twenty (20) minutes (as determined by the organizers), followed by a maximum of fifteen (15) minutes of questions from the judges.

**5.7.4.b** Teams must explain their design to the judges and describe the process they followed to arrive at their final design.

**5.7.4.c** The order of presentations is determined at random.

**5.7.4.d** The order of presentations will be announced one half-hour before presentations begin.

**5.7.4.e** Teams must be present for this announcement.

**5.7.4.f** Teams are prohibited from changing their position in the order of presentations.

**5.7.5** Material Provided by the Organization

**5.7.5.a** The following equipment will be provided to competitors during the analysis phase:

1 A private design space with at least one table
2 Paper and pencils/pens for writing

**5.7.5.b** Teams will be provided with the following equipment during their presentation:

1 A digital projector
2 A computer containing a copy of the team's presentation
3 A whiteboard or a large writing pad

**5.7.5.c** The decision to allow access to the internet or not will be made by the competition director. The competition director's choice should be announced in the CEQ Preparatory Workbook.

**5.7.6** Material to be Brought by Participating Teams

**5.7.6.a** Books and paper documentation needed to resolve the cases.

**5.7.6.b** Portable computers (limit of one (1) per participant).

**5.7.7** Evaluation Grid

| Evaluation Criteria | Points |
|---|---|
| Solution | /55 |
| Report | /15 |
| Presentation | /20 |
| Innovation | /10 |

| Total | 100 |
|---|---|

## 5.8 Oral Debates

**5.8.1** This is an opportunity for participants to apply their analytic skills to present a well-reasoned point of view on a previously unknown resolution with a minimum of preparation. The purpose of this event is to evaluate participants' ability to communicate ideas and formulate arguments. The traditional rules used in formal debate competitions are modified and loosened to allow students without formal debate experience to participate.

**5.8.2** Registration Criteria

**5.8.2.a** Teams consist of a maximum of two (2) eligible participants.

**5.8.3** Format of the Competition

**5.8.3.a** The debate competition uses a double elimination format. This means that teams are only eliminated from the competition following their second defeat.

**5.8.4** Preparatory Elements

**5.8.4.a** Heads or Tails

1 A coin is tossed to determine "heads or tails." The winning team chooses which position they would like to take: the proposition or the opposition.

**5.8.4.b** Subject of the Resolution

1 The organizing committee determines the subject of the resolutions.
2 After sides have been assigned, the resolution is revealed.
3 The nature of the resolution is such that an intermediary engineering student should be able to defend their point without any preparation.
4 The resolutions cannot contain truisms (self-evident truths) and will avoid using absolutes, such as "all," "everyone," or "always."

**5.8.4.c** Deliberation

1 Teams have ten minutes in isolation, after the resolution has been given, to prepare for the debate.

**5.8.5** Debate

**5.8.5.a** The order of speakers and the time accorded to each is as follows:

1 First speaker for the proposition: 5 minutes

2 First speaker for the opposition: 5 minutes

3 Second speaker for the proposition: 5 minutes

4 Second speaker for the opposition: 5 minutes

5 Conclusion by the first speaker of the opposition: 2 minutes

6 Conclusion by the first speaker of the proposition: 2 minutes

7 Note: Speakers may request a 15 second grace period. To do so, the speaker or their colleague must knock loudly on the table. If requested, the speaker must use this time or they risk being penalized.

### 5.8.5.b Proposition

1 Role

i    The side of the proposition presents a series of initial ideas which they will defend.

ii   The proposition can redefine the resolution to focus the debate on a single main topic. However, they cannot transform the resolution into a truism or redefine it in such a way as to give it a different sense than was present in the original resolution. The proposition must also avoid debating on subjects that are unknown to the average engineer.

iii  The proposition can use one of the two strategies given below.

iv   The proposition bears the burden of proof; they must convince the judges to resolve the proposition beyond a reasonable doubt.

2 Strategies for the Proposition

i    By Principle: When arguing by principle, the proposition presents a principle and an affirmation. The principle is a general statement that is debateable and based in facts, experience, or morality. The affirmation is an application of this principle to a particular situation related to the resolution. The affirmation must address an important subject and can be a confirmation of the resolution.

Ex. 1: Resolution: "Engineers must have a solid general education" / Proposed affirmation: "Students in engineering should take more complementary courses"

Ex. 2: Resolution: "Canadians profit from free healthcare" / Proposed affirmation: "We should discourage people from going to the doctor unless necessary."

ii   By Plan: When arguing by plan, the proposition identify a principle and affirmation. Once this has been done, they present a plan to build on the affirmation and change the status quo. They must identify the need for change and the way in which their plan will facilitate this change.

Argument by plan is most effective when the principle and affirmation are almost indisputable. When presenting a plan, it is important that it not be overly specific, since preparation time is limited and the technical knowledge needed to develop the plan isn't really present.

Ex. 1: Resolution: "Engineers must have a solid general education" / Proposed affirmation: "We should require students to complete a two-year program of general education before allowing them to register in an engineering program"

Ex. 2: Resolution: "Canadians profit from free healthcare" / Proposed affirmation: "People should be billed each time they visit the doctor"

Ex.3: Resolution: "Waste management should be stricter" / Proposed affirmation: "Waste management should be stricter, as such we propose that every household that produces more than a given quantity of garbage should have to pay a heavy fine."

3 Roles of the Speakers

i   First speaker: The first speaker for the proposition must explain the resolution, clearly state the principle and affirmation, and then clarify the definitions. If an argument by plan is presented, the entire plan must be presented by the first speaker. Finally, the first speaker must begin the arguments in favour of the affirmation or plan.

ii   Second speaker: The second speaker for the proposition continues the first speaker's arguments and reaffirms the concepts attacked by the opposition. No new parts of a plan can be introduced and the terms of the resolution cannot be defined. However, new arguments can be presented as well as new evidence.

**5.8.5.c** Opposition

1 Role

i   It is the opposition's duty to convince the judges that the opinions presented by the proposition are incorrect.

ii   If the argument presented by the proposition is a truism or requires specific knowledge to be debated, the opposition can use a "point of procedure" to raise the issue with the judges after the proposition's first speaker has finished. If the point of procedure is accepted, the opposition must then redefine the resolution to be debateable.

iii   If the proposition presents an argument by principle, the opposition is left to simply attack that principle.

iv   If the proposition presents an argument by plan, the opposition can attack the principle, the affirmation, or the arguments of the plan. The opposition can also show how the plan would fail or identify undesirable side effects that would result from its application. Finally, the opposition could propose another plan that would be more effective than the original. It is the opposition's first speaker who would have to introduce other plans.

### 5.8.5.d Elements of the Debate

1 Conclusions

i    Conclusions must summarize the most important points in a concise and convincing way. No new arguments or facts should be presented, unless as a direct refutation of something that has already been discussed.

2 Questions

i    Questions are a secondary way to refute arguments. They can point out weak ideas as soon as these are presented.

The current speaker has the right to accept or refuse questions. The adversary who wishes to pose a question shows their interest by simply rising to stand.

If the speaker does not wish to accept the question, they can make a sign with their hand or simply say "no thank you." If so, the questioner must sit back down.

If the current speaker agrees to answer the question, their adversary must ask it in less than fifteen seconds.

Both team members can participate in answering the question. Time is stopped while the question is being asked, but the current speaker must answer it during their own speaking time.

Each speaker must accept at least one question during their speaking turn, if their adversary honestly wishes to ask it. Three attempts to pose a question constitute an honest try. If a speaker has already refused to answer twice, the moderator will let the speaker known that they must take the question.

Questions cannot be asked during the first or last minute of a speaking turn, nor during the conclusions.

3 Interjections

i    Speakers may sometimes contradict themselves or make an absurd assumption. An interjection at that time can signal an error and add to the debate.

ii    Interjections are acceptable if they are short, well directed, and by preference witty. If an excess of interjections is bothering the crowd, the moderator may intervene.

4 Points of Procedure

i    If one of the teams believes that the rules have been broken, they must immediately alert the moderator by standing and saying "point of procedure." The moderator will stop the time and ask the speaker who rose to explain their point of procedure. The team must then explain in what way the debate's rules were contravened. Finally, the moderator will make a decision by saying "point accepted" or "point rejected." That decision is final and without appeal.

ii  If it seems clear that the moderator is mistaken, teams must not argue the point. They should count on the judges addressing the moderator's mistake. The time it takes to invoke the question and address it is not taken from the time allocated to the team currently debating. The following is a list of some of the infractions that would require a point of procedure:

a.  Case of a truism: this point of procedure is without a doubt the one that can turn a debate around. The case of a truism occurs when the proposition is redefined in such a way that the debate cannot proceed, as it now presents a fact or tautology. To raise this point of order, the team wishing to bring it must wait until the end of the speaker's turn in which it has occurred and then raise it with the moderator. If accepted, the case of a truism gives the opposition team the power to redefine the proposition, giving them an opportunity to invalidate the entire speaking turn that just took place. If it is refused, the debate continues with the redefinition that was given.

b.  Specific knowledge (in the redefinition): If an aspect of the redefinition requires knowledge that an average student in engineering would not have, a case of specific knowledge can be made.

To raise this point of procedure, the team wishing to bring it must wait for the end of the speaker's turn who is responsible for the use of specific knowledge and then raise it with the moderator. If it is accepted, it gives the opposition team the power to redefine the terms of the specific knowledge used, giving them the opportunity to invalidate this portion of the redefinition. If it is refused, the debate continues with the redefinition that was given.

c.  Specific knowledge (in the argument): If an argument includes an element that requires specific knowledge that an average engineering student would not have, a case of specific knowledge can be made. To raise this point of procedure, the team that wishes to bring it must immediately inform the moderator, who will stop the debate. If the point is accepted, the moderator will ask the speaker at fault to withdraw or modify their argument and will ask the judges to discount it. If the point is refused, the debate continues with the argument as presented.

d.  Debater directly addressing an adversary: Because each debater is required to always address the moderator directly, it is a breach of decorum if one of them directly addresses another debater. A debater wishing to raise this point must do so immediately and the moderator will correct the situation, as needed.

e.  Inaccurate quote: If a debater is incorrectly quoted by another, they can immediately raise this issue with the moderator. If their point is accepted, the moderator will ask the speaker at fault to withdraw or modify the quote in question and will ask the judges to discount it. If the point is refused, the debate will continue with the quote as presented.

f.  New argument in the conclusion: Given that the spirit of a debate involves an exchange between the two teams, it is prohibited to present new arguments on a concept that wasn't addressed in the debate during the conclusion. To raise this point of procedure, the team wishing to bring it must do so immediately with the moderator, who will stop the debate. If the point is accepted, the moderator will ask the speaker at fault to withdraw or modify the argument in question and will ask the judges to discount it. If the point is refused, the debate will continue with the argument as presented.

g.  Introduction of part of the plan by a second speaker: The responsibility for putting an argument by plan in place falls to the first speaker. As such, if the second speaker introduces a subject in their arguments that was not presented by the first speaker beforehand, a fault has been committed. To raise this point of procedure, the team wishing to bring it must immediately do so with the moderator, who will stop the debate. If the point is accepted, the moderator will ask the speaker at fault to withdraw the argument in question and will ask the judges to discount it. If the point is refused, the debate will continue with the argument as presented.

h.  Unprofessional or offensive behaviour: If a speaker demonstrates unprofessional behaviour by being vulgar, inappropriate, or through a simple lack of class, then a clear lack of decorum has occurred. In this situation, the moderator will ask the speaker at fault to correct the situation. If they refuse to do so, it could result in their team's disqualification.

iii  If the officials failed to follow the rules of the debate (incorrect order for speakers, too much time given to speak, etc.), this can be politely indicated through a point of procedure.

5 Bilingualism

i  This competition is bilingual: participants can debate in the language of their choice, either French or English. However, a speaker who begins the debate in one language must complete it in the same one. Despite this, the members of a single team can each debate in a different language, if they so desire. It is the role of the organizing committee to ensure that judges are bilingual, to the extent this is possible.

**5.8.6** Material Provided

1 Paper and pencils/pens for writing.

**5.8.7** Evaluation

**5.8.7.a** Officials

1 Moderator

i  The debate moderator ensures that the debate's rules are followed. They accord speaking rights (present the speaker) and establish the time limits. The moderator rules on the "points of procedure" raised by the speakers. The moderator's decisions are final. Offensive remarks regarding their decisions will not be tolerated.

2 Timekeeper

i  The timekeeper uses hand signals to provide indications to the debaters:

   a.  When one (1) minute has passed, the timekeeper will raise one open hand to signal the start of potential questions;

   b.  After each minute, the timekeeper will show how many minutes remain in the debate with their fingers;

   c.  When there is only one (1) minute left, the timekeeper will raise their fist to signal the end of potential questions;

   d.  Once there are only ten (10) seconds left in the debate, the timekeeper will raise their arm to a 90 degree angle and gradually lower it from the vertical for those ten (10) seconds, so as to bring it to rest horizontally like a clock hand. If a debater knocks on the table during these ten (10) seconds (also known as a "grace period"), the timekeeper will lower their arm, wait for the ten (10) seconds to pass, and resume a new countdown with fifteen (15) additional seconds, without the possibility of any further extensions.

ii  If a question is posed in the first or last minute of a speaking turn, the timekeeper will let the moderator know, who will then refuse the question, as no questions can be posed during these parts of a speaking turn.

3 Judges

i  There should be an odd number of judges for each debate. Without consulting with the other judges and in silence, each judge will discreetly vote for the team they believe won. The vote is done on paper and is submitted to the moderator. The team with the most votes wins the debate.

**5.8.7.b** Evaluation Grid

See the following page.

# Oral Debate – Evaluation Grid

| Proposition: | Opposition: |
|---|---|

**Subject: Be it resolved that**

| Proposition arguments | Opposition counter-arguments | | Opposition arguments | Proposition counter-arguments |
|---|---|---|---|---|
| - | - | | - | - |
| - | - | | - | - |
| - | - | | - | - |
| Conclusion | | | Conclusion | |
| Points of procedure against: | | | Points of procedure against: | |

| Evaluation of the proposition | | | | Evaluation of the opposition | | |
|---|---|---|---|---|---|---|
| | **1st speaker** | **2nd speaker** | | | **1st speaker** | **2nd speaker** |
| Poise: | 1 2 3 4 5 | 1 2 3 4 5 | | Poise: | 1 2 3 4 5 | 1 2 3 4 5 |
| Quality of language and eloquence: | 1 2 3 4 5 | 1 2 3 4 5 | | Quality of language and eloquence: | 1 2 3 4 5 | 1 2 3 4 5 |
| Structure | 1 2 3 4 5 | 1 2 3 4 5 | | Structure | 1 2 3 4 5 | 1 2 3 4 5 |
| Originality | 1 2 3 4 5 | 1 2 3 4 5 | | Originality | 1 2 3 4 5 | 1 2 3 4 5 |
| Team cohesion: | 1 2 3 4 5 | | | Team cohesion: | 1 2 3 4 5 | |
| Force of the arguments: | 1 2 3 4 5 | | | Force of the arguments: | 1 2 3 4 5 | |

## Overall Evaluation of the Debate

| Domination | Net advantage | Advantage | Minor advantage | Minor advantage | Advantage | Net advantage | Domination |
|---|---|---|---|---|---|---|---|

| **Comments** | **Comments** |
|---|---|
| | |