



Toronto Metropolitan University
Engineering Competition Fall 2024
Bio-Engineering Rulebook

1.1. Goal

In this competition, teams comprehensively solve a bio-engineering problem. Teams are required to identify the issues outlined in the prompt and develop a bio-engineering design process in order to solve the issue in question.

1.2. Team Composition

The Bio-Engineering team will comprise a maximum of two (2) competitors.

1.3. Language

The presentation and report can be done in either English or French. The presentations and report must be consistent in language.

1.4. Topic

It is recommended that the topic incorporate more than one engineering discipline. However, while the topic should challenge competitors' technical knowledge and skills, it should also require competitors to evaluate the economic, environmental, political and social implications of their proposed solutions and address the requirements of the customer. The winning solution will not necessarily be the most technically effective solution, but the solution that has the most real-world applicability and forethought. Therefore, the topic should be one that could exist in the real world. Topics drawn from reality must be fully documented. All necessary documentation must be provided to the competitors when the problem is presented.

1.5. Resources

1.5.1. Facilities Required

- One (1) amphitheater (presentation of problem and team presentations)
- One (1) workroom per team (design of solution)

1.5.2. Personnel Required

1.5.2.1. Judges

A minimum of three (3) judges (and in any excess, an odd number of judges) are required to assess the problem-solving abilities, proposed solution, communication skills and team dynamics of the competitors. Judges in this category should come from a variety of backgrounds including communications, sales and technical or consulting engineering experience related to the topic.

1.5.2.2. Competition Leads

The Competition Leads are responsible, along with the VP Competitions, for the design and implementation of the Bio-engineering competition. The Competition Leads must present the problem at the beginning of the competition and answer any questions raised by competitors. Only the Competition Leads may answer questions during the design period. The Competition Leads will also answer any questions the judges may have during the competition.

1.5.2.3. *Official Timekeeper*

The Official Timekeeper must be responsible for enforcing time limits during the question period, solution development and presentations, as stated in the rules.

1.5.3. Equipment Provided by MEC

The following Equipment will be made available to all competitors during the competition time period:

1.5.3.1. *During the Design Phase*

- A design room with at least one (1) table, two (2) chairs and a whiteboard or blackboard
- Paper and pencils/pens for writing
- One (1) digital storage device to submit the team presentation (USB)
- Internet connectivity
- Some information relevant to the design problem, at the discretion of the Competition Leads

1.5.3.2. *During the Presentation*

- One (1) digital projector
- One (1) computer containing the team's presentation file
- Whiteboard(s) or blackboard(s)

1.5.4. External Resources Allowed

The competitors can bring the following equipment with them:

- Any background research conducted by team members prior to the competition
- Any electronic material stored on CDs, USB keys, disks or other storage devices
- Please check with the organizers to make sure the format of your electronic information will be accessible using the computers provided by MEC
- Any textbooks, course notes or other reference material
- Each team member is allowed one computer

Note: Since the use of the Internet and other external resources is permitted in this competition, all information used by competitors must be referenced carefully. Competitors are not permitted to submit work completed by anyone other than the members of their team. If there is any evidence that competitors are submitting plagiarized work, the entire team will be eliminated from the competition and their home schools will be notified. Volunteers will monitor each team during the design process to deter teams from cheating, however, competitors are expected to act in good faith with the spirit of the competition.

1.6. Procedure / Timeline

1.6.1. Case Structure

The competition will consist of one (1) written case that will prompt the competitors to apply the bio-engineering process and propose a solution. The case will be distributed at the

beginning of the competition design time and its solution will also be required by the end of the competition design time.

1.6.2 Pre-Competition

Prior to the competition, information about the rules of the competition will be available on the competition website, metengcomp.com.

1.6.3 Competition

1.6.3.1. Presentation of Problem

The case will be presented to the competitors at the beginning of the briefing competition period. The lead time for this distribution will be enough to allow for the reading of the case and to allow for questions to be addressed but should not exceed one (1) hour. Competitors will not be permitted to start working towards a solution during the lead time period.

1.6.3.2. Question Period

Competitors have fifteen (15) minutes to ask the Competition Leads any questions. Only the time used to ask the questions (not the answers) should be counted in the fifteen (15) minutes. Time used by judges to pose questions will not be counted.

1.6.3.3. Solution Development

Teams will be given four (4) to eight (8) hours to develop their solutions to the case, produce all required deliverables, and prepare their presentations. All deliverables shall be submitted to the Competition Lead before the end of the allotted time. Competitors may finish before the end of the allotted time.

1.6.3.4. Rest Period

Competitors must be allowed a minimum of one (1) hour to rest before the presentation phase starts.

1.6.3.5. Solution Presentations

The presentation should cover both completed cases and should present both the material included in the reports and any additional information and explanations required in order to meet the evaluation criteria below. Competitors will have a maximum of fifteen (15) minutes to present their solutions. All team members must be present and participate in the presentation or be penalized by the judges. Judges then have a maximum of ten (10) minutes to ask questions. Judges can ask a question at any time during the presentation. The clock must be stopped during these interruptions. In order to ensure that all competitors cease to work on the case solutions once the design time has ended, the competitors cannot include any material in their oral presentation which is not included within their submitted written reports or presentation materials.

1.6.4. Timekeeping

The following rules will be adhered to with respect to timekeeping.

1.6.4.1. *During the Design Phase*

- Time is started when the teams leave the competition briefing
- The remaining time must be announced three (3) hours, one (1) hour, thirty (30) minutes, and ten (10) minutes before the end of the allotted time

1.6.4.2. *During the Presentation*

- Time is halted when a judge asks a question during the presentation
- Time is halted when a team member answers a question asked by a judge
- The remaining time must be indicated to the competitors ten (10) minutes, five (5) minutes and one (1) minute before the end of the allotted time for the presentation to the judges
- A countdown presentation that is visible to both the judges and presenters must be given during the last thirty (30) seconds of the presentation

1.6.5. Presentation Order

- Presentation order shall be determined randomly
- Presentation order shall be announced thirty (30) minutes before the presentations commence. All teams are required to be present at this announcement
- Teams are not allowed to switch places in the presentation order
- Teams may not be in the audience for presentations of their competition until after they have completed their presentation. Any attempts at entering the presentation room before their allotted time will result in a warning for a first offense, and a ten (10) point penalty for any further offenses

1.6.6. Deliverables

1.6.6.1. *For Competitors*

Prior to the competition, information about the rules of the competition and the abstract will be available on the competition website, metengcomp.com.

1.6.6.2. *From Competitors*

Each team is required to submit, electronically, before the end of the design period, a report of less than ten (10) pages (excluding appendices) is recommended detailing their proposed solution. The report will be made available to the judges before each team's presentation. The report requirements will be outlined in the abstract. Each team is required to submit, electronically, before the end of the design period, a presentation about their proposed solution(s). The requirements of the presentation will be outlined in the abstract.

1.6.7. Response to Questions

- Only the Competition Leads may answer questions during the problem presentation and design phases. Volunteers and judges may not answer questions regarding rules and procedures at any time
- During the presentation of the problem, the Competition Leads shall answer orally and write down the answers provided
- During the design phase, only questions related to deliverable content shall be answered. No answers shall be provided in response to questions about the problem that might lead to the development of a new approach or which might invalidate a solution.
- During the design phase, answers to questions shall be provided in writing to all teams at the same time. Fifteen (15) minutes may be allowed to elapse for a significant number of questions accumulated before responses are provided. A copy of the responses must be provided to the judges prior to the presentations

1.7. Assessment and Judging

- The panel must have an odd number of judges
- The panel must have at least three (3) judges
- Feedback forms shall be provided to each team following the announcement of winners but prior to the end of the MEC

1.7.1. Judging Matrix

Solution	<ul style="list-style-type: none"> ● Deliverable Compliance with Expectations ● Environmental, Biomedical and Economic Consideration ● Technical Feasibility/Innovation ● Real-world Applicability 	/60
Report	<ul style="list-style-type: none"> ● Clarity ● Writing Style ● Professionalism ● Design Justification 	/15
Presentation	<ul style="list-style-type: none"> ● Voice ● Articulation and Timing ● Visual Aids ● Response to Questions 	/25
Penalties	<ul style="list-style-type: none"> ● Plagiarism ● Insufficient Citation ● Documents Received After Deadline ● Absent Team Member ● Verbal Disclosure of School During Presentation 	-50 -50 -50 -25 -10

	<ul style="list-style-type: none">• Disclosure of School in Presentation Files/Documents• Disclosure of School by Supporting Audience Members	-10 -10
Total		/100