

The CSME IDEA: 3DP Challenge

The CSME Innovative Design in Engineering Applications (CSME IDEA) Challenge is intended to provide mechanical and multi-disciplinary engineering undergraduate university and technical college students in Canada an opportunity to engineer, build and assemble their designs from basic components readily available in the market with fixed budget. Students will demonstrate their achievements through creativity, innovation, application of sound engineering design principles, and business development skills to address a technology readiness of the proposed innovative design in which technical and business merits and challenges are integrated. The 2015 competition challenge is towards high 3D printing quality.

Only one design package will be accepted from each educational institution consisting of: (i) technology readiness report, (ii) a predefined fabricated sample using “own built” 3D printer and (iii) a marketing material in the form of a three-minute video clip will be reviewed by the judging committee. Each engineering school will be responsible to select and nominate the best project to represent the particular institution in this year CSME IDEA Challenge.

Eight semi-final design projects will be selected and invited to 2015 Canadian Congress of Applied Mechanics (CANCAM). Three students from each selected design package team will be invited to present their design and business case to a panel of judges at this conference.

Eligibility Rules and Submission Guidelines

CSME Innovative Design in Engineering Applications for 3D Printing (CSME IDEA: 3DP) Challenge is open to all engineering undergraduate or technical college students in Canada. All students must be enrolled as undergraduate engineering degree or diploma programs in Canada at any time during the present academic year. All competitors agree to abide by the Engineering Code of Ethics.

The competition is open to individual students or groups of up to ten students. Each project is required to be authorized by a faculty advisor from the corresponding academic institution. Each design team may only have one entry.

Design Submission Guidelines

Three components of design package should be submitted:

1. Technology Readiness Report (in English) consisting of two parts:
 - a. Technical Report (max 10 pages) and
 - b. Business Plan (max 5 pages)
2. A predefined 3D prototype fabricated by the built 3D Printing should be submitted for evaluation and dimension measurements (Prototype details will be provided to students at a later date)
3. A three minute design promotion video clip.

The submission must adhere to CSME IDEA 3DP Terms & Conditions.

Judging and Scoring

Each design must be presented in the format of a technology readiness report, in which two packages are provided. The first is a technical package which is focused on the technical and engineering aspects, manufacturability and environmental aspect. The second package is a business case in which, business plan, 3DP mass production financial and marketing aspects of the project are to be addressed. One key criterion for accepting any design package is the use of a budget of up to \$300 CAD for all parts excluding machining.

The design team's total score is based on the five components: (i) overall design package, (ii) innovation of the design, (iii) quality of the produced prototype, (iv) the value and potential impact of the design, the depth of business case and marketing of such design and (v) the ability to communicate or demonstrate the features and value of the design (video clip).

Criteria

3D Printing Overall Design Package	20%
Technical Innovation	20%
Business Case Proposition	20%
Prototype Quality	20%
Communication and Presentation	20%

The Challenge will take place in three (3) rounds.

Round 1 - A committee of qualified judges from each engineering institution will select and nominate one design team to represent its institution for (CSME IDEA: 3DP) Challenge.

Round 2 - The selected nominees from Round 1 will assemble their design packages and send to CSME Challenge Committee. Eight semifinalist team will be selected and invited to 2015 Canadian Congress of Applied Mechanics.

Round 3 - The semi-finalists will compete in a 20 minute verbal presentation including video clip with additional 10 minutes reserved for questions and answers. Finalists in four categories (Best Overall Design Package, Best Technical Merit, Best Business Plan Proposition and Best Video Clip) will be selected by CSME IDEA Challenge Committee.

CSME reserves the right to select fewer Finalists that what will be nominated, if, in its sole discretion, it does not receive a sufficient number of eligible and qualified Submissions.

Awards

Grand Prize: \$2000 to the team and one year of CSME membership for faculty advisor

Best Technical Merit: \$1000 to the team and one year of CSME membership for faculty advisor

Best Business Plan Proposition: \$1000 to the team and one year of CSME membership for faculty advisor

Best Video Clip: \$500 to the team and one year of CSME membership for faculty advisor

Each team is entitled to win one award only from above list.

Key Dates

Educational Institution Participation Registration: Nov. 30th, 2014

3DP Design Package submitted for round 2: April 30th, 2015

Semi-finalist announcement: May 31st, 2015

Finalist selection and award ceremony: 2015 Canadian Congress of Applied Mechanics (CANCAM).

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