

Students' Mechanism Design Contest - NaCoMM 2011

Objective

One of the key objectives of AMM is to promote innovation among the students. Towards this end, a mechanism design contest has been made an integral part of NaCoMM since 2009. The purpose of the competition is to encourage the students to apply their theoretical knowledge in the domain of mechanisms and machines to solve problems relevant to the society.

Who can participate

Participation is restricted to individuals/groups of students (up to three members), who should be registered as full-time students/research scholars/project staff in recognised institutes.

How to participate

Participants are invited to submit proposals for design, construction and operation of mechanisms which are innovative and capable of solving a challenging design problem.

1. The design problem may be chosen from a wide range of application domains - from agricultural and rural technology to automobile and aerospace engineering.

A few typical examples are given below:

- a. Tree climbing mechanism
- b. Walking mechanism (with two or more legs)
- c. Mars-rover type of small vehicle which can climb over significant obstacles
- d. Staircase climbing mechanism
- e. Foldable mechanisms, which can be deployed as useful structures, e.g., space-efficient beds, tables and other furniture, etc.
- f. An ergonomic device to help crush manually, for making road "aggregate" in rural application
- g. An economical cable way system to transport materials (level and sloping grounds)
- h. Assistive devices for carrying heavy loads up staircases manually, e.g., LPG cylinders, water cans,
- i. Ergonomic design for rod-bending machine to be used at construction sites
- j. Assistive devices for easier vertical transport of materials at construction sites
- k. A foot-operated substitute of the hand-pump

It may be noted that the above listing is only representative. The participants can choose one of the above ideas, or come up with their own along the lines of the above.

2. The mechanism could be manually powered or operated by a small motor or engine.
3. Operational safety of the mechanism/machine and the power source is of utmost importance. Unsafe machines will not be allowed in the demonstration.
4. It is suggested that the mechanism be light and compact, and easy to transport, assemble and operate at the venue. Significant modifications/repairs cannot be done at the venue.
5. Machines using significant artificial intelligence (robots) are not allowed. However, some sort of remote control from an operator is allowed.
6. The prototype machine must be operated satisfactorily in front of the judges, and each machine will be given 3 chances at the most.

Procedure and deadlines

1. Participants must submit a 2-page proposal by **September 15, 2011 (closed)**, outlining the design challenge and novelty/innovation of the proposed design. Submissions should be done through emails, to the conference email address, with the following subject line: Proposal for the Students' Mechanism Design Contest.
2. Decision on the proposals will be sent out by **September 30, 2011 (closed)**, and participants with promising proposals would be asked to proceed towards developing a working prototype.
3. Participants have to submit details of the prototype by **October 30, 2011 (closed)**, including photographs or video clips. Please mail all the materials as a .zip file attached to the conference e-mail id with the subject line "Update on SMDC entry".
4. Reviews of the prototypes will be sent out by **November 10, 2011 (closed)**, and successful participants would be asked to come for the final round, i.e., demonstration of the working prototypes during NaCoMM 2011 at IIT Madras.
5. Finished prototypes are to be demonstrated during NaCoMM 2011 (**November 30 - December 02, 2011 (closed)**) before a panel of judges. The winners will be awarded cash prizes and certificates. All participants would receive certificates of participation from the Association of Machines and Mechanisms(AMM), the parent body hosting NaCoMM 2011.

6. The winner would be decided based on the extent of innovation, difficulty of the design challenge, effectiveness of the proposed solution towards solving the actual problem, etc.

7. In any matter related to the contest, the decisions of the judges and/or the organisers would be final and binding.