

NSF/ASME Student Design Essay Competition

2022

CHALLENGES IN THE DESIGN OF COMPLEX SYSTEMS

To encourage students to think about the future of engineering design and the intellectual foundations which are essential for the development of the field, NSF and ASME sponsor a student design essay competition. Winners receive \$1,500 to attend the 2022 ASME Design Technical Conference (IDETC) which will be in St. Louis, MO, August 14-17, 2022 (<https://event.asme.org/IDETC-CIE>).

The Competition – Story

You are a consultant working for a high tech, global manufacturing enterprise. That company wants to position itself to be a high-tech global design and manufacturing enterprise in the year 2040. As a consultant, you want the company to succeed both domestically and globally so you will need to:

- Define the characteristics of a successful high-tech global design and manufacturing company in the year 2040.
- Identify the research challenges it will face. Identify the mode of operation of the company. Determine what partnerships it will need to form.
- Identify the challenges this company has chosen to address proactively.
- Identify what technology will be necessary to support its employees in being globally competitive.
- Research issues worthy of investigation. We are interested especially in the scientific foundations for understanding the product realization process which are suitable for a global manufacturing enterprise.

Judging Criteria

Students are judged on scholarship, the depth and sophistication of their arguments, logical presentation of material, correct English usage, and relevance to problems facing the US industry, government and research communities. There are separate categories for graduate and undergraduate students.

Awards and Responsibilities

An award to cover expenses will be made to the winners of this competition up to \$1500 per team. The reimbursement will take place after the conference upon the receipt of an invoice that includes receipts to substantiate expenditures. A winner must present his/her findings at a poster session at IDETC in order to receive the award. Every person given a travel grant will receive a certificate to record his/her accomplishment.

Submission Format and Dates

Any undergraduate or graduate student enrolled in a university anywhere in the world is eligible although the focus is on students enrolled in universities in the United States. Multiple authors are limited to two people. The travel grant is shared between the co- authors. A student may receive no more than 2 awards over the years.

Essays should be a maximum of 10 pages long.

There are separate categories for submissions by undergraduates and graduate students. The research paper may be the outcome of a course for which the student receives academic credit.

Deadlines

Papers due.....June 1, 2022
Target date for notification of winners July 1, 2022
IDETC 2022 August 14-17, 2022

Please include a cover page with:

Email address, phone number and address for all authors, university affiliation including advisor's name and whether this submission is for the graduate or undergraduate category. NOTE – we will remove this page when sending the submission out for review, so this should be the only page on which your identifying information should appear.

Submit Entries to Professor Janet K. Allen, janet.allen@ou.edu, 404-403-3296.

For more information see [IDETCtravel.com](https://idetctravel.com/) (<https://idetctravel.com/>).

About IDETC 2022

The 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference will be held in St. Louis, MO from August 14-17, 2022. Check (<https://event.asme.org/IDETC-CIE>) for further information about this conference.

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The opinions, findings, and conclusions or recommendations expressed in the submissions are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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Facilitators of the NSF Design Essay Competition