



Student Challenge Using Differential Equations Modeling

SUMMARY REPORT for SCUDEM IX 2024
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Overview and Problems Offered

SCUDEM IX 2024 is an international student team challenge in which teams of three students from high schools and undergraduate programs select one of three problems and produce a mathematical model using differential equations. They then prepare a ten-minute video and post it Unlisted in YouTube for judges to view and then score and render constructive comments.

The three problems for SCUDEM IX 2024 can be found here:

https://www.contest.comap.com/scudem/2024_Problems/SCUDEM_IX_2024_Problems.pdf

These three problems are in the general area of (A); Chemistry/Life Sciences; (B) Physics/Engineering; and (C) Social Sciences/Humanities. We give the title of each problem.

- Problem A: Sweet Tooth and Heavy Metal
- Problem B: Narrative Influences
- Problem C: Standing Against a Mammoth

Problems were released on 19 October 2024 and team videos were due on 12 November 2024, while judging was completed by 6 December 2024.

Judges were asked to use a Scoring Rubric found at this website

https://www.contest.comap.com/scudem/flyers/SCUDEM_Scoring_Rubric.pdf and to add constructive comments for each team.

Summary Statistics

442 students participated, forming **155** three student (or less) teams, with **87** coaches. In some cases coaches worked with multiple teams. Several teams did not have coaches. **102** teams submitted a final ten-minute video for judging.

211 volunteer faculty and industry personnel served as judges. The judges rendered **645** team scores and constructive comments. This gave each team, on average, **6.32** judge scores and comments for a great deal of feedback through which students will grow with respect to their modeling abilities.

Recent SCUDEM events have had students, coaches, and judges engage from the following countries and regions: Albania, Algeria, Australia, Azerbaijan, Bangladesh, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Brazil, Canada, Chile, China, Columbia, Egypt, France, Germany, Ghana, Guyana, Hungary, India, Indonesia, Iran, Iraq, Ireland, Italy, Japan, Jordan, Kenya, Kuwait, Macao, Malaysia, Mauritius, Mexico, Morocco, Nepal, Netherlands, New Guinea, New Zealand, Nigeria, Norway, Oman, Pakistan, Panama, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Serbia, South Africa, Spain, Sri Lanka, Taiwan, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Viet Nam, Virgin Islands, Zimbabwe.

Awards Information for SCUDEM IX 2024

Overall the following awards, with numbers of teams and percentage of each level were:

Award Level	Number	Percent
Outstanding	26	25.5 %
Meritorious	69	67.6 %
Successful	7	6.9 %
Totals	102	100%

The breakouts of problem selection and awards for each problem were:

Problem A Summary	52 Submissions
Outstanding	13
Meritorious	35
Successful	4

Problem B Summary	18 Submissions
Outstanding	4
Meritorious	14
Successful	0

Problem C Summary	32 Submissions
Outstanding	9
Meritorious	20
Successful	3

Announcement of Awards

SIMIODE publicly announces only the Outstanding Team Awards and will formally invite these teams to post their team video at the [SIMIODE's YouTube Channel](#). SCUDEM IX 2024's Outstanding Team Award videos will be posted there in January 2025.

All teams will receive a Press Release form for use in getting out the word of their engagement.

SCUDEM VIII 2023's Outstanding Team Award videos are available at [SIMIODE's YouTube Channel](#) along with the Outstanding Team Award videos from previous SCUDEM events.

All teams and their coaches are provided with award information (Outstanding, Meritorious, and Successful), including all anonymous judges scores, average score, and complete set of judges' comments, as well as certificates for awards and participation. All coaches and judges are given certificates of appreciation.

We thank all for making SCUDEM IX 2024 a successful and meaningful event for students.