

2018 MCM/ICM[®] Call for Entries February 8–12, 2018



The MCM and ICM Contests are Sponsored by:

- The Institute for Operations Research and the Management Sciences
- The American Statistical Association
- The Society for Industrial and Applied Mathematics
- The Mathematical Association of America
- The Department of Defense Analysis, Naval Postgraduate School
- Chinese Society for Industrial and Applied Mathematics
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MCM[®]

Dear Colleagues:

The Mathematical Contest in Modeling (MCM), a unique international contest for high school students and college undergraduates, will hold its 34rd annual competition in February 2018. Last year, 8843 teams from 943 institutions in thirteen countries participated in the contest. The MCM is designed to encourage effective discussion supporting informed modeling decisions, improve student problem-solving, and promote technical writing. Students participate as team members rather than as individuals, creating an environment for peer learning and skill development. Each team must have an advisor, who could be advising more than one team. Your institution can be a part of the MCM effort by promoting faculty and student participation from within and across departments. Advisors help organize the teams, distribute contest materials, and insure solution papers get to COMAP on time.

Please take a moment to read this Contest Overview and then go to www.mcmcontest.com for more information about registration, deadlines, and contest rules. All registration will take place online. If you have any questions please contact mcm@comap.com.

We hope that you and your team take pleasure in this intellectual challenge and enjoy the spirit of this competition.

Best Wishes,



Patrick Driscoll, Contest Director

ICM[®]

Dear Colleagues:

The Interdisciplinary Contest in Modeling (ICM), an international contest for high school students and college undergraduates, will hold its 20th annual competition in February 2018. Last year, 8085 teams from 788 institutions in eight countries participated in the contest. ICM is designed to develop and advance interdisciplinary problem-solving skills as well as competence in written communication. This year there will be three ICM problems to select from: one will focus on network science, the second on environmental science, and the third on policy. You can specifically build and prepare your team to tackle one of these topics, if you so choose. Each team must have an advisor, who could be advising more than one team. Your institution can be a part of the ICM effort by promoting faculty and student participation from within and across departments. Advisors help organize the teams, distribute contest materials, and insure solution papers get to COMAP on time.

Please take a moment to read this Contest Overview, then go to www.mcmcontest.com for more information about ICM history, registration, deadlines, and contest rules. All registration will take place online. If you have any questions please contact icm@comap.com.

We hope that you and your team(s) will enjoy this modeling challenge.

Best Wishes,



Chris Arney, Contest Director

Contest Director

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U.S. Military Academy, NY

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U. S. Military Academy, NY

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COMAP, Inc., MA

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Kristin Arney
U.S. Military Academy, NY

Rachelle DeCoste
Wheaton College, MA

Kathryn Coronges
Northeastern University, MA

Amy Richmond
U.S. Military Academy, NY

Contest Overview

MCM and ICM are parallel contests and follow the same rules.

All the information listed below, except where noted, pertains to both contests.

The Ground Rules

Contest Date and Time: The 2018 contests must be accomplished at a local facility starting at 5:00 PM EST on Thursday, February 8, 2018 and ending at 8:00 PM EST on Monday, February 12, 2018.

Advisors must ensure that no further modifications, enhancements, additions, or improvements may be made to the team's solution paper after the contest deadline. (8:00 PM EST on Monday, February 12, 2018.)

Each team is required to submit an electronic copy of its solution paper by email to solutions@comap.com. The advisor or any team member may submit this email. **Team papers MUST be received at COMAP by the submission deadline of 9:00 PM EST (U.S.) on February 12, 2018.**

COMAP must then receive your Signed Control Sheet via email on or before **Monday, February 23, 2018. No school or team member identifying information may appear anywhere except on the control sheet.**

Contest Materials: The contest Website contains all the guidelines, requirements, judging criteria, and suggested procedures for the submission of solution papers, including step-by-step instructions.

No materials will be available in any other form.

On Thursday, February 8, 2018 at 5:00 PM EST, the contest problems will be posted on the contest Website.

Advisors: The role of advisor can be filled by any faculty, staff member, or student at your institution and they do not have to be from the mathematics department. The advisor will act as the main point of contact for the team.

Advisors may help guide and rehearse the team prior to the beginning of the competition but may not assist the team in any way once the contest begins.

During the competition, the students are required to develop all of their modeling, analysis, and writeup without the help of others.

Registration of Teams: All teams must register online on or before February 8, 2018, at 3:00 PM EST.

A \$100 registration fee must be paid at registration online in order to participate.

The MCM and ICM contests allow **unlimited** teams per institution, with **unlimited** teams per department.

Each team may consist of up to three high school or undergraduate students who are enrolled in the same school at the time of the contest.

Team members do not need to be named at the time of registration, but they must be determined before the contest problems are posted.

Contest Problems: Teams will choose any of six modeling problems:

- MCM Problem A (continuous)
- MCM Problem B (discrete)
- MCM Problem C (data insights)
- ICM Problem D (operations research/network science)
- ICM Problem E (environmental science)
- ICM Problem F (policy)

Data, if needed, will be attached to the problem or available on the contest Website.

Sample problems from other years are online at www.mathmodels.org

The Report: Participants may use all the resources available such as computers, libraries, software packages, Internet, or any other inanimate sources.

Problems are designed to be open-ended and are unlikely to have a unique solution.

Attention must be focused on clarity, analysis, and design of the solution.

The narrative section of the solution papers must be typed and in English. Partial solutions are acceptable.

Results: Judging will be completed by April 30, 2018.

Team solutions will be designated as Disqualified, Unsuccessful, Successful Participant, Honorable Mention, Meritorious, Finalist, or Outstanding.

The results will be posted on COMAP's Website.

Certificates and press releases will be mailed or emailed by May 2018.

Select outstanding teams will have their solution papers published in *The UMAP Journal*.

Prizes:  **TWO SIGMA** will sponsor a \$10,000 Scholarship Award to the two best USA teams in the competition.

The Institute for Operations Research and the Management Sciences (INFORMS) will designate a single Outstanding team from each of the six problems as an INFORMS winner.

The American Statistical Association (ASA) will designate one Outstanding Team from MCM problem C as a ASA winner.

The Mathematical Association of America (MAA) will designate two Outstanding Teams from MCM as a MAA winner.

The Society for Industrial and Applied Mathematics (SIAM) will designate one Outstanding team from MCM Problems A and B as a SIAM winner.

Recent MCM Contest Outstanding Teams

Chongqing University of Posts and Telecommunications, China
Nanjing University, China
Nanjing University of Posts and Telecommunications, China
Neijiang Normal University, China
North Carolina State University, NC, USA
Shandong Normal University, China
Shanghai Jiao Tong University, China (4)
Southwestern University of Finance and Economics, China
The University of Hong Kong, Hong Kong (SAR)
University of California at Berkeley, CA, USA

Recent ICM Contest Outstanding Teams

Anhui University, China
Brown University, RI, USA
Harvard University, MA, USA
Harvey Mudd College, CA, USA
Humboldt State University, CA, USA
Nanjing University Of Aeronautics And Astronautics, China
NC School of Science and Mathematics, NC, USA (2)
Shanghai Jiao Tong University, China (3)
United States Military Academy, NY, USA
University of Electronic Science and Technology of China, China
Zhejiang University, China