

MCM-ICM: Procedures and Tips for a Great Experience

NOTE: This article accompanies, but does not replace the official Rules, Registration, and Instructions information found at the contest website (<https://www.contest.comap.com/undergraduate/contests/mcm>). Please ensure you understand and follow the rules and procedures outlined on the contest website.


Introduction

The purpose of this article is to assist and guide students and advisors participating in *The Mathematical Contest in Modeling (MCM)* and *The Interdisciplinary Contest in Modeling (ICM)*. In the article, COMAP provides information about the administration of the contests from registration through solution submission, as well as tips to ensure your contest experience is smooth, successful, and enjoyable.

COMAP'S Mathematical Contest in Modeling (MCM) and Interdisciplinary Contest in Modeling (ICM) are international contests designed to provide undergraduate level (or below) students with the opportunity to work as team members to engage in and improve their modeling, problem solving, and writing skills. Teams apply mathematics to model, develop, and communicate a solution to a real-world problem. Individuals with a Bachelor's degree or above are not allowed.

The article is presented in three sections:

- **Before the Contest** – contest registration and preparation.
- **During the Contest** – contest process and avoiding common mistakes made by teams and advisors.
- **After the Contest** – submitting solution reports and getting results.

Look for  which indicates an important contest tip.

BEFORE THE CONTEST

Participants. The MCM/ICM are true team competitions. Each team may consist of one, two, or three (maximum allowed) students. Historically, the best teams have three members. All students on the team **MUST** be enrolled at the same institution at the start of the contest; COMAP will make no exceptions to this rule. Having a math major on your team is not required, and student team members may be from any field of study. After you have created your team, the next step is to choose an advisor.

Advisor. Any faculty, staff member, or student at your institution can fulfill the role of Advisor. The advisor will act as the main point of contact for the team, and will help ensure the team follows the contest rules and regulations. The advisor does not have to be from the mathematics department. We encourage faculty members to serve as team advisors, however students may act as advisors.

Contest Preparation. We encourage teams and advisors to prepare for the contest by viewing previous years' problems and solutions. You can find these problems and solutions, as well as relevant contest articles at www.mathmodels.org. The problems are free to view, and the solutions and articles are available to mathmodels.org members.

The **best** contest papers present complete and logical analysis in an organized and clear presentation above and beyond simply addressing the requirements. These papers are easy to read, easy to follow, logical, and comprehensive. These papers will usually include sections that address assumptions with justifications, modeling process(es), results of modeling/analysis, strengths and weaknesses, sensitivity, and conclusions. These papers have in line documentation, footnotes, or endnotes with associated references.



Contest Tip

Look at problems from previous years to understand the choices you will have when the contest begins. Understand the general differences between MCM and ICM problems, both in terms of the mathematics involved and the topics addressed (MCM: A-discrete, B-continuous, C-data insights; ICM: D-operations research/network sciences, E-sustainability, F-policy).

Registration. Review contest information and register teams via the contest website (<https://www.contest.comap.com/undergraduate/contests/mcm>) prior to the registration deadline. COMAP will not accept late registrations.

The registration fee for MCM/ICM is \$100 per team. Please register only the teams that will take part in the contest. Registration fees are non-refundable.

The MCM/ICM registration process has been streamlined and split in to 2 parts **Advisor Registration** and **Team Registration**. Advisors may register any number of teams and should use the same email address and password for all teams under the same advisor.

Step 1 - Advisor Registration: The registration process will take advisors through a series of screens that ask for an email address and contact information. Enter the required information as you step through the screens. **Be sure to use a valid current email address** so that we can use it to contact you at any point before, during, or after the contest, if necessary.

Step 2 - Team Registration: After an advisor has registered they can now login and complete the Team Registration process. Teams must register via the contest website prior to the registration deadline. Team members must be specified prior to beginning of the contest period. The first step in the team registration process is to pay the \$100 registration fee. After we receive approval from your financial institution, the system will issue a control number for your team. Your team is not officially registered until you have received a team **control number**. If you are registering more than one team, you must repeat this process for each team.

Be sure to print the page that displays your team’s control number, as this page lists the advisor ID number and email address that you entered when registering. You will need this information later to complete the contest procedures. Additionally, this is your transaction receipt/invoice. You will **NOT** receive an email confirmation of your registration.



Contest Tip

Be sure to print or save a copy of your team’s receipt/invoice with your advisor ID number and control number. Team Number and Control Number are the same. Example 2500001.

An example of an invoice/receipt can be seen to the right with the Team Number and Advisor ID Number highlighted in red.

Be sure to keep a copy of this information because you will need it during the contest.

Example:

Team Number: 2500001 Advisor ID: 100000



Contest Tip

You can access your Receipt/Invoice, Advisor ID Number and Team Number by logging into your advisor account. Review the image for details.

COMAP, Inc.
175 Middlesex Turnpike,
Suite 3B
Bedford, MA 01730 USA
mcm@comap.com
www.contest.comap.com

Thank you for your order.

Team Number: 2500001
Advisor ID: 100000
Advisor Name: Test Advisor
Advisor Email Address: info@comap.com

This is your invoice/receipt.
Your order number is 20240907691769, placed on September 7 2024, 2:14 AM.

Billed To:
Test
175 Middlesex Tpk
Bedford, MA 01730

| Quantity | Description | Price |
|--------------------|-------------------------------------------------------------|--------------------|
| 1 | Registration for Team 2500001 for the 2025 MCM/ICM contest. | US \$100.00 |
| TOTAL PAID: | | US \$100.00 |

Advisor Admin Page

- 1 Your Advisor ID Number
- 2 How many teams you have registered
- 3 Team Number
- 4 Click here to view/print your receipt/invoice

MCM: The Mathematical Contest in Modeling
ICM: The Interdisciplinary Contest in Modeling

Registered MCM/ICM 2025 Advisor

1 → Advisor Id: **100000**
Advisor Name: Test Advisor
Institution: COMAP

2 → You have 1 team registered

[Edit Advisor or Institution Data](#)

[Register Team](#)
[Logout](#)

3 → **Team/Control Number 2500001** **Problem: (unspecified)**

4 → [View Teams Receipt/Invoice](#)

Contest notes and updates:

None.

Follow us @COMAPMath on X or COMAPCHINAOFFICIAL on Weibo for the most up to date contest information.

- ✓ 1 [Enter Team Member Names](#)
- 2 [Verify Certificate Information](#)

The steps below are not available until the contest begins at 5pm EST on Thursday, January 23, 2025. Please return to this page at that time, or when your team has completed its solution paper, to complete the remaining steps.

- 3 [Choose Problem](#)
- 4 [Submit Final Solution Paper](#)

Electronic Solution Received:
(not yet received)

Final Designation:
(unavailable)

DURING THE CONTEST

Viewing Problems. The contest problems will become available precisely at 5PM EST on the starting day of the contest. Team members can view the problems by visiting <https://www.contest.comap.com/undergraduate/contests/mcm>.

The contest problems will become available on these mirror sites precisely at 4:50PM EST on the starting day of the contest

<https://www.comapmath.com/MCMICM/index.html> (Asia)

<https://www.comap-math.org/mcm/index.html> (North America)

<https://www.mathportals.org/mcm/index.html> (North America)

<https://www.immchallenge.org/mcm/index.html> (North America)

No password will be needed to view the problems; simply go to any of the contest web sites after the starting time of the contest and you will see a link to view the problems. If you cannot access any of the sites, there may be a problem with your local Internet connection. We highly recommended that you bookmark or save the list of mirror sites above for later reference.



Contest Tip

The contest problems go live on the mirror sites 10 minutes before the main COMAP website. Access to these mirror sites maybe more responsive as they may have less traffic.

Problem Choice. The contest problem page will contain a link to a zip file that contains a folder of 3 MCM problems and 3 ICM problems. Teams are free to choose from any one of the six problems, but should submit a solution to only one problem. Any relevant data files or support materials will be included in the problem folder. Each of the six problems is categorized as shown below:

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



Contest Tip

Be sure to read the problem statements carefully before choosing your team's problem. Each problem will have different and specific requirements, such as required memos or letters, specific solution format, and/or page limits. You can work on more than one problem, but should submit a solution to only one of the problems.

Contest Assistance. During the MCM/ICM contest period, teams **may not** seek help in obtaining answers, ideas, or information, or in locating appropriate resources, from any persons outside of their team to include their advisor, other teachers, other students, and/or experts or professionals in a field relevant to the problem. This restriction includes no use of electronic social media such as, but not limited to: emails, texting, chat rooms, interactive blogs, Twitter, Weibo, help or support sites, etc. Additionally, posting or sharing any part or all of the problem statement, your team's solution process, or any partial or complete work in any form or medium during the contest is strictly prohibited. COMAP will disqualify or deem unsuccessful any team that violates this rule. The relevant issue is one of intent: each team of students is expected to develop all of its substantive analysis and solution without the help of others. COMAP continually monitors the Internet during the contest period for violations of contest rules.

Comparison Software. COMAP compares each submitted solution to all other solutions of the problem your team chose. The result of this comparison identifies solutions and/or parts of solutions that are exactly and/or similar to other papers. COMAP uses these results to verify the originality of your team's solution.

Sources and References. Teams may use any inanimate source of data or materials: computers, software, references, websites, books, etc. All sources must be credited using in-line documentation, footnotes, or endnotes, as well as a full bibliographic citation in a Reference section. Failure to credit a source for data or materials (pictures, graphics, charts, background information, ideas, etc.) may result in a reduction of award level, or in disqualification if deemed plagiarism.

Problem Notes and Updates can be found on the MCM/ICM problem page throughout the contest period. If you still have a question that is not covered on the website, you can send an email to mcm@comap.org. Be sure to include the team number with your correspondence.



Contest Tip

Follow [COMAPMath on X](#) or [COMAPCHINAOFFICIAL on Weibo](#) for the most up to date information before, during, and after the contest. Be sure to check the website for any updates during the contest. COMAP will update the website with any updated contest information which may include problem specific updates.

Solutions/Submission.

Solution Report Length. MCM/ICM solution reports have a maximum length of 25 pages. A Table of Contents is encouraged and does count toward the page limit. Reference list (or Bibliography), notes pages, and any appendices all count toward the page limit and should be included after the solution pages.

Report on Use of AI. Clearly indicate the use of LLMs or other AI tools in your report, including which model was used and for what purpose. Please use inline citations and the reference section. Also append the Report on Use of AI ([described here](#)) after your 25-page solution. This section has no page limit and will not be counted as part of the 25-page solution.

Adobe PDF and 12-Point Type. Papers including the summary page must be in English, typed in a readable font of **at least 12-point type**, and must use either US Letter or A4 page size. The solution must consist entirely of written text, and possibly figures, charts, or other written material only. No non-paper support materials such as computer files or software will be accepted.



Contest Tip

There is no specific required minimum page length for a complete MCM/ICM submission. You may use up to 25 total pages for all your solution work and any additional information you want to include (for example: drawings, diagrams, calculations, tables). Partial solutions are accepted. We permit the careful use of AI such as ChatGPT, although it is not necessary to create a solution to the problem. If you choose to utilize a generative AI, you must follow the COMAP AI use policy. This will result in an additional AI use report that you must add to the end of your PDF solution file and does not count toward the 25 total page limit for your solution.

Team Control Number. The Solution Paper must display the team control number and the page number at the top of every page; for example, use the following page header on each page:

Team # 321

Page 6 of 13



Contest Tip

Be sure to carefully check your team number as it is not uncommon to mistype or transpose a number.

The names of the student team members, advisor, or institution should **NOT** appear on any page of the electronic solution. The solution should **NOT** contain any identifying information other than the team control number.



Contest Tip

Do not include any type of team identification such as student names, institution name or geographical region. If you are required to include a letter with your submission, be sure not to sign the letter with your name. If you feel as though you need to have a formal closing to such a letter we suggest using: Sincerely, Team #2000000.

Submitting Solution Report. Each team is required to submit an Adobe PDF electronic copy of its solution using the new online submission page <https://forms.comap.org/241335097294056>. Any team member or the advisor may submit the PDF submission. You will need your **team's control number**, **advisor id number** and your **problem choice** to complete your submission.

- Use your team’s control number as the name of your PDF file attachment. For example: **2000000.pdf**



Contest Tip

Be sure to name your file carefully and check your team number, as it is not uncommon to mistype or transpose a number.

- COMAP will only accept an **Adobe PDF** file of your solution. DO NOT include programs or software with your email as they will not be used in the judging process. Limit one team’s solution per online submission. Your team's summary should be included as the first page of your file and NOT in a separate second file. ***Note: The PDF attachment must be less than 20MB!!**

Authenticity. By submitting a PDF solution paper during the contest period, you are guaranteeing that the work is completely your own. COMAP investigates and takes all suspected instances of plagiarism seriously. MCM/ICM also uses comparison software to identify possible plagiarism within contest paper submissions. Plagiarism will result in disqualification.

AFTER THE CONTEST

We recommend that you login to the contest web site using the **Advisor Login** link to verify that your team’s Electronic Solution was received at COMAP.

Contest Tip



Electronic Solution status will be updated after the contest deadline has passed. In most cases solution status will be updated 24-48 hours after the contest is over.

| | |
|-----------------------------------------------|------------------------------------------------|
| Electronic Solution Received: Received | Final Designation: <i>(unavailable)</i> |
|-----------------------------------------------|------------------------------------------------|

If after 48 hours your team solution shows as *(not yet received)*, that indicates that we did not receive a PDF submission from your team. Contact us as soon as possible via email with your team control number.

| | |
|----------------------------------------------------------------|------------------------------------------------|
| Electronic Solution Received: <i>(not yet received)</i> | Final Designation: <i>(unavailable)</i> |
|----------------------------------------------------------------|------------------------------------------------|

Judging. Judging will be completed in March-April and the results will be posted on or before April 30th each year. The Solution Papers will be recognized as Disqualified, Unsuccessful, Successful Participant, Honorable Mention, Meritorious, Finalist, or Outstanding Winner.

When the results are available you can login to the contest web site using the **Advisor Login** link to verify your team’s Final Designation.

| | |
|-----------------------------------------------|--------------------------------------------------|
| Electronic Solution Received: Received | Final Designation: Successful Participant |
|-----------------------------------------------|--------------------------------------------------|

COMAP will not rejudge any contest papers. All contest papers go through a rigorous judging process and COMAP stands behind the designations awarded to papers. We recommend that you review the outstanding papers and read the judges commentary after the contest for insights into the quality of the content and presentation of the best papers.

Once the results are made public on the website, PDF certificates will be available for download. The spelling and order of the student names on the certificate is input by your team advisor and COMAP does not change or edit this information.



Contest Tip

The order of the student names has no bearing or importance on participation. In the eyes of COMAP and the contest directors, all team members are equal. Advisors should ensure they spell team members' names correctly when registering.

If you find that there is an error with your certificate email COMAP with your team number, the error and the correction. We will only correct spelling errors and typos. We will not change any other information.

Resource Guides

[MCM/ICM: Registration Walk Through](#)

The purpose of this article is to assist and guide advisors participating in the MCM/ICM. In the article, COMAP provides information about the contest registration process.

[Use of Large Language Models and Generative AI Tools in COMAP Contests](#)

This policy is motivated by the rise of large language models (LLMs) and generative AI assisted technologies. The policy aims to provide greater transparency and guidance to teams, advisors, and judges. This policy applies to all aspects of student work, from research and development of models (including code creation) to the written report. Since these emerging technologies are quickly evolving, COMAP will refine this policy as appropriate.

[MCM-ICM: Online Submission Process](#)

The purpose of this article is to assist and guide students and advisors participating in MCM/ICM. In the article, COMAP, provides information about the new online submission process using the new online submission page <https://forms.comap.org/241335097294056>. You will need your team's **control number**, **advisor id number** and your **problem choice** to complete your submission.