

## 第八届国际数学建模挑战赛 (IM<sup>2</sup>C 2022)

### 邀请函

第八届国际数学建模挑战赛 (IM<sup>2</sup>C 2022) 中华区赛季开始**报名**啦！让我们一起共赴创造与发现之旅。

国际数学建模挑战赛(IM<sup>2</sup>C 或 IMMC)是一项面向全球中学生的国际性新型数学建模竞赛，竞赛宗旨在于鼓励参赛者应用数学建模，探索和解决现实世界的重要问题，以普及数学建模教育，增强中学生科技创新核心素养与关键能力。IM<sup>2</sup>C 既是中学生数学建模与 STEM 实践历练的舞台，也是参赛中学的数学暨 STEM 教育成果展示与交流的园地。

IM<sup>2</sup>C 充分体现 STEM 教育所提倡的数学与科技、工程的学科交叉，体现数学与社会生产、生活的应用结合。儒莲教科文机构联合电气与电子工程师学会(IEEE 亚太)、香港工业与应用数学学会，共同主办 IM<sup>2</sup>C 2022 中华区域赛事。第八届 IM<sup>2</sup>C 2022 中华赛将增设初中组别题目。命题与评审委员会由来自 IM<sup>2</sup>C、IEEE 和 HKSIAM 的专家教授共同组成，他们的学科与专业涵盖数学和科技、工程的不同领域。IM<sup>2</sup>C 2022 命题与评审委员会及答辩决赛大评审团主席由 IM<sup>2</sup>C 国际专家组成员、香港科技大学副校长汪扬讲座教授担任。

### IM<sup>2</sup>C 2022 赛制

为适应中华区校历的地区多样性，中华区域赛将开启秋季和冬季两个赛季，参赛团队可自由选择参加其中一季或两季竞赛，以最佳成绩参加中华区 2022 年度总评选及晋级国际赛。

鉴于近年来初中参赛队伍的增加，根据评比公平原则，为增进初中生的实践选择机会，2022 年 IM<sup>2</sup>C 中华赛将增设初中组别题目。初中生可通常选做初中组别题目，亦可选做高中组别题目；而高中生只可选做高中组别题目，不可选做初中组别题目。

IM<sup>2</sup>C 鼓励学科交叉与综合创新，提倡团队成员发挥多元优势，提倡指导教师来自包括数学在内的 STEM 跨学科背景。国际数学建模挑战赛每支参赛团队须由来自同一所中学的 2-4 名同学组成，且须有来自该校的至少 1 位教师担任指导老师。来自世界各地的参赛团队经过国家/区域赛的选拔，进入国际赛程；在国家/区域与国际层面，皆有机会获取各级奖项。

中华区域赛参赛团队可自行选择以“命题论文”参赛，亦可选择以“自主选题论文”参赛。“命题论文”须在连续的 96 小时之内完成并提交，“自主选题论文”不限开始时间，

惟须在赛季截止时间前提交。具体而言，选择以“命题论文”方式参赛，团队自秋季赛 2021 年 11 月 18（星期四）晚 8 时（GMT/UTC+8 时区）开始，或者冬季赛 2022 年 1 月 20 日（星期四）晚 8 时（GMT/UTC+8 时区）开始，根据中华专家组的命题，在连续的 96 小时内，完成并提交一篇数学建模论文；选择以“自主选题”（必须是现实世界问题）方式参赛，则自主决定论文工作的开始时间和进度，但必须在中华区秋季赛或冬季赛截止时间——2021 年 11 月 22 日（星期一）晚 8 时（GMT/UTC+8 时区）或者 2022 年 1 月 24 日（星期一）晚 8 时（GMT/UTC+8 时区）之前完成并提交一篇自主选题的数学建模论文。在随后的专家评审中，命题论文与自主选题论文将分开评审，两类论文中成绩进入首 20% 的团队，将自动获得晋级国际赛程的机会。

IM<sup>2</sup>C 2022 中华赛区国际赛程将在 2022 年 3 月 9 - 14 日连续 5 日之间进行，国际赛程的参赛团队须在此 120 小时之内，就 IM<sup>2</sup>C 国际专家组命制的问题，完成并提交一篇数学建模论文。

### 答辩决赛

入围中华区域赛程答辩决赛与国际赛程答辩决赛的团队将获得主办机构的邀请，于 2022 年 4 月下旬莅临香港（如公共卫生及安全条件许可，否则将择日以云端在线方式举行），做论文演示与答辩。大评审团将分别对中华区域赛程与国际赛程的决赛团队进行评审。

IM<sup>2</sup>C 中华委员会还将从中国大陆、台湾、香港及澳门进入国际赛程论文答辩的队伍中，各评选两篇最佳论文（中华区共八篇），推举进入国际评审（其他参赛国或地区亦各遴选两篇最佳论文进入国际评审）。

### 评奖与颁奖

中华区各参赛团队将有机会以中华赛论文或国际赛论文的评审结果，获取中华区各级奖项。每支参赛团队的获奖机会都将是平等的。高中组别及初中组别，中华赛命题论文、自选题论文与国际赛论文，将分组别分类评奖，你的团队无论是凭中华赛命题论文，或者自选题论文，还是国际赛题论文，都将有机会去竞争中华区域各大奖项。

IM<sup>2</sup>C 2022 中华峰会暨数学建模夏季工作坊将于 2022 年夏季举行。这将是中华区中学师生为主角的高规格学术盛会，IM<sup>2</sup>C 2022 中华区颁奖典礼亦将在峰会举行，荣获中华赛与国际赛特等奖或其他优秀论文的团队将获邀做大会全体报告（Plenary Speech）。届时组委会及命题委员会专家成员将于峰会亮相，相关领域知名专家学者也将出席，与中华区中学师生共襄丰富多彩的学术交流活动。国际特等奖团队还将获邀出席国际组委会举办的颁奖暨学术交流活动（如公共卫生及安全条件许可）。

## 语言

IM<sup>2</sup>C 2022 中华赛区实行中英双语政策。中华赛程或国际赛程的论文与答辩可以中文或者英文完成。经国际赛程最终提交到国际评审环节的论文必须使用或翻译为英文。

## IM<sup>2</sup>C 2022 日程

第八届国际数学建模挑战赛（IM<sup>2</sup>C 2022）中华赛区日程安排如下：

报名 / 注册	即日起至 2021 年 11 月 18（秋季赛） 2021 年 11 月 22 日至 2022 年 1 月 20 日（冬季赛）
中华区域赛	2021 年 11 月 18 晚 8 时至 11 月 22 日晚 8 时（秋季赛） （11 月 22 日亦为不限时自主命题论文提交截止日） 2022 年 1 月 20 日晚 8 时至 1 月 24 日晚 8 时（冬季赛） （1 月 24 日亦为不限时自主命题论文提交截止日）
国际赛	2022 年 3 月 9 日晚 8 时至 3 月 14 日晚 8 时
答辩决赛	2022 年 4 月下旬，香港（或择日远程在线）
IM <sup>2</sup> C 中华峰会暨夏季工作坊 及国际颁奖典礼	2022 年暑期，地点待定 （或远程在线）

## 报名与提交论文

IM<sup>2</sup>C 2022 每支参赛团队无论是以命题论文方式参赛，还是以自主选题论文方式参赛，每次参赛皆须缴纳报名费 100 美元（国际赛程及答辩决赛免费）。

注册报名、下载题目与提交论文，请访问 [immchallenge.org.cn](http://immchallenge.org.cn)，登录竞赛网站，点击“[活动](#)”栏相应项目进行[报名](#)。请参赛团队务必仔细阅读网站上 [IM<sup>2</sup>C 2022 竞赛指引及规则](#)。

欲参阅样题论文、往届国际数学建模挑战赛题目及获奖论文，以及更多关于 IM<sup>2</sup>C 信息，请访问 IMMC 中华区官网 [immchallenge.org.cn](http://immchallenge.org.cn) 及国际官方网站 [immchallenge.org](http://immchallenge.org)。

参与数学建模，做 STEM 实践的先锋！接受挑战，你的 2022 注定不同！

热切期待贵校团队报名参加第八届国际数学建模挑战赛 IM<sup>2</sup>C 2022!



中华国际数学建模挑战赛委员会

附件：

IM<sup>2</sup>C 简介

国际数学建模挑战赛(IMMC 或者 IM<sup>2</sup>C)在 2014 年创办于美国波士顿，是一项面向全球中学生的国际性新型数学建模竞赛，其创办机构是美国数学及其应用联合会 (COMAP) 和香港儒莲教科文机构 (NeoUnion)，竞赛宗旨在于鼓励参赛者应用数学建模探索和解决现实世界的重要问题，以普及数学建模教育，增强中学生数学核心素养和科技创新能力。IM<sup>2</sup>C 既是中学生数学建模实践与历练的舞台，也是参赛中学的数学与 STEM 科技创新教育成果展示与交流的园地。

中华国际数学建模挑战赛委员会是获主办机构授权的学术非牟利机构（香港特别行政区政府批准公共慈善机构代码 91/14657），专门负责 IM<sup>2</sup>C 在中华区的命题、评审与选拔等学术工作。学术顾问委员会及专家组由中华各地区知名高校与科研机构学者专家以及全球华人知名学者组成，兼顾本地性与国际性，共同为中华区中学师生营建一个普惠与共享的 STEM 学习交流平台。

IM<sup>2</sup>C 中华官网是 [immchallenge.org.cn](http://immchallenge.org.cn) 国际官方网站是 [immchallenge.org](http://immchallenge.org)





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## An Invitation to Secondary School Students in the Greater China Region

**For the 8<sup>th</sup> Annual International Mathematical Modelling Challenge ( IM<sup>2</sup>C 2022 )**

We warmly invite secondary school students from Mainland China, Taiwan, Hong Kong and Macau to participate in the 7th Annual International Mathematical Modeling Challenge-IM<sup>2</sup>C 2022. The [registration](#) for the Greater China Regional contest has started. Let's join our hands together and pursue a journey of creation and discovery in the coming season.

International Mathematical Modeling Challenge (IMMC or styled as IM<sup>2</sup>C) is an innovative contest in mathematical modeling for secondary school students all over the world. The aim of IM<sup>2</sup>C is to promote mathematical modeling education and enhance students' core competencies in mathematics and innovation, encouraging participants to explore the application of mathematical modeling in real life situations to solve problems of importance. IM<sup>2</sup>C in this Region is an inclusive and sharing platform both for secondary school students to practice mathematical modeling, and for schools to demonstrate and exchange their educational accomplishments in mathematics and STEM.

IM<sup>2</sup>C in Greater China Region is an interdisciplinary practice integrating mathematics with science, technology and engineering which reflects the essence of STEM education. The co-founder of IM<sup>2</sup>C NeoUnion ESC Organization works with the Institute of Electrical and Electronics Engineers (IEEE Asia) and Hong Kong Society of Industrial and Applied Mathematics to co-organize the IM<sup>2</sup>C 2022 in Greater China. IM<sup>2</sup>C 2022 Greater China will set a category with a specific problem for students of Junior Secondary School. The Problem Setting Committee and the Judging Panel consist of experts and professors from IM<sup>2</sup>C Committee (Zhonghua), IEEE and HKSIAM whose disciplinary fields cover mathematics, science, technology, and engineering. Prof Yang WANG, Vice-President and Chair Professor of Mathematics of The Hong Kong University of Science and Technology acts as Chairman of the Problem Setting Committee and Grand Jury of the Final Presentation Competition of IM<sup>2</sup>C 2022 Greater China.

### IM<sup>2</sup>C 2022 and its Rules

To cater for the diversity in school calendar across the Region, two seasonal contests, namely Autumn and Winter Contest, will be open for IM<sup>2</sup>C 2022 in Greater China. Teams may choose one of the seasonal contests according to their schedule to compete for the yearly awards in the region of Greater China and qualification to proceed to the international round.

In view of the increase in the number of Junior High School teams in recent years and in order to make equal opportunities for Junior High School students, the 2022 IM<sup>2</sup>C Greater China will add a specific problem of Junior High School category. Junior students can usually choose to work on either the problem of Junior High School category or one of the problems of

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Senior High School category. Senior High School students can choose ONLY to work on one of the problems of Senior High School category.

IM<sup>2</sup>C encourages interdisciplinary innovation and teamwork for students and teachers. IM<sup>2</sup>C requires each team to be composed of 2-4 students from the same secondary school, and at least one teacher from the same school to serve as team advisor. Participating teams from all over the world will be selected by a national/regional selection process before they enter into the international round of IM<sup>2</sup>C. For both the national/regional and the international round of competition, winning teams will be recognized as different levels of awards.

Participating teams from Greater China region can choose: 1) to work on a problem created by the Problem Setting Committee of IM<sup>2</sup>C Greater China starting from 8:00 pm on November 18<sup>th</sup> (Thu) 2021 (GMT/UTC+8 hours), Autumn Contest, or January 20<sup>th</sup> (Thu) 2022 (GMT/UTC+8 hours), Winter Contest. During the following consecutive period of 96 hours, teams must complete and submit a solution paper of mathematical modeling; 2) alternatively, register for a self-challenging problem, i.e., the team can choose freely a problem set by the team members themselves. Note that such problem must be a real-world problem discovered and identified by the team. To work on the freely-chosen problem, teams can decide on their own about the starting time and schedule; however, they must complete and submit their solution paper of modeling on or before 8:00 pm November 22<sup>th</sup> (Mon) 2021 (GMT/UTC+8 hours), or January 24<sup>th</sup> (Mon) 2022 (GMT/UTC+8 hours), deadline of the seasonal contest in Greater China. Solution papers of the two categories will be judged separately. Teams whose papers are judged as among the top 20% of the two categories of papers respectively will automatically proceed to the International Round of IM<sup>2</sup>C 2022.

IM<sup>2</sup>C 2022 International Round in the Greater China Region will be conducted during 8:00 pm March 9 – 8:00 pm March 14, 2022 (GMT/UTC+8 hours). Within a consecutive period of 120 hours, teams entering the IM<sup>2</sup>C international round will work on the problem set by the International Expert Panel, complete and submit their solution paper on or before the end of the contest period. Teams from over 30 countries and regions will be selected by their country/region to enter IM<sup>2</sup>C 2022 International Round.

### **Final Presentation Competition**

The finalist teams of IM<sup>2</sup>C 2022, both for the Greater China Regional and the International rounds, will receive invitation from the IM<sup>2</sup>C Committee - Zhonghua to come to Hong Kong in late April, 2022, if public health condition permits, and attend the Final Presentation Competition, presenting and defending their works in front of the Grand Jury.

IM<sup>2</sup>C Committee Greater China will also select the best two papers from each of the Mainland, Taiwan, Hong Kong and Macau finalists in the International Round (totally 8 papers) for recommendation to the International Expert Panel. (Each participating country or region will select the best two papers for the International Panel's Judgement.)

### **Recognition and Award Ceremony**

The participating teams from Greater China Region will have the equal chances to be recognized with different awards at both regional and international levels. The papers will be judged as per categories of Greater-China-Committee-set problem, freely-chosen problem, and International-Expert-Panel-set problem, respectively. Each participating team, no matter whether or not they are selected into the International Round, will have the chances to compete for the awards of the Greater China Region.

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An IM<sup>2</sup>C 2022 Greater China Summit cum Summer Workshop and Award Ceremony will be held in the summer of 2022. This will be a prestigious academic conference of the Region for secondary school students and teachers exclusively. Teams winning the Outstanding Award of the Regional and/or International contests will be invited to deliver plenary speeches at the Summit. Members of IM<sup>2</sup>C Committee and the Problems Setting Committee of Greater China along with renowned experts in relevant fields will also be present, so as to interact and exchange with the secondary school students and teachers. Winning teams of the International Outstanding Award or equivalent teams will be invited to attend the academic activities and award ceremony to be held by the International Organizing Committee, if public health condition permits.

### Languages

IM<sup>2</sup>C 2022 Greater China will adopt the bilingual policy. The solution paper and presentation for both IM<sup>2</sup>C Greater China regional and the international contests can be written and conducted in either Chinese or English. But papers which are submitted to the International Expert Panel for international final judgement must be written in English or translated into English before submission.

### Timeline of IM<sup>2</sup>C 2022

The schedule for the 8<sup>th</sup> International Mathematical Modeling Challenge ( IM<sup>2</sup>C 2022 ) Greater China Region is as follows:

<i>Registration</i>	<i>Present - Nov 18, 2021 (Autumn Contest) Nov 22 2021 – Jan 20, 2022 (Winter Contest)</i>
<i>Regional Competition</i>	<i>Nov 18 20:00 – Nov 22 20:00, , 2021 (Autumn Contest) (Nov 22 is deadline for papers of self-chosen problem.) Jan 20 20:00 – Jan 24 20:00, 2022 (Winter Contest) (Jan 24 is deadline for papers of self-chosen problem.)</i>
<i>International Competition</i>	<i>Mar 9 20:00 – Mar 14 20:00, 2022</i>
<i>Final Presentation</i>	<i>Late April 2022, Hong Kong or Online</i>
<i>Regional Summit &amp; Award Ceremony and International Award Ceremony</i>	<i>Summer 2022, Bay Area or Online</i>

### Registration and Submission

The registration fee for IM<sup>2</sup>C 2022 Greater China is US\$ 100 per team for either Greater China Committee-set problem or freely-chosen problem. **The International Round and Final Presentation Competition are free of charge.**



For registration, downloading problems and submission of solution papers for IM<sup>2</sup>C 2022, please visit [www.immchallenge.org.hk](http://www.immchallenge.org.hk). To [register](#) your team, you need to login with your account and password and click “Event”. Participating teams should read carefully the contest [Instructions and Rules](#) on the website.

For sample and past problems and solution papers, details about IM<sup>2</sup>C 2015 through 2021, and more information on IM<sup>2</sup>C, please visit [www.immchallenge.org.hk](http://www.immchallenge.org.hk) and [www.immchallenge.org](http://www.immchallenge.org)

**Practice mathematical modeling, and be a pioneer for STEM!**

**Take this challenge, and you will definitely experience a different 2022!**

**We look forward very much to receiving registration from your school for the 8th International Mathematical Modeling Challenge- IM<sup>2</sup>C 2022!**



International Mathematical Modeling  
Challenge Committee (Zhonghua)

Appendix:

### **A Brief Introduction to IM<sup>2</sup>C**

International Mathematical Modeling Challenge (IMMC or styled as IM<sup>2</sup>C), established in 2014 in Boston, is an innovative mathematical contest in modeling for secondary school students all over the world, whose co-founders and co-sponsors are the Consortium for Mathematics and Its Applications (COMAP) and NeoUnion ESC Organization (NeoUnion). The aim of IM<sup>2</sup>C is to promote mathematical modeling education and enhance students' core competencies in mathematics and innovation, encouraging participants to explore the application of mathematical modeling in real life situations to solve problems of importance.

The adjudication, team selection, and recognition for IM<sup>2</sup>C in the Region of Mainland China, Taiwan, Hong Kong and Macau are authorized exclusively to International Mathematical Modeling Challenge Committee (Zhonghua), a non-profit organization with charity institution code 91/14657 approved by Hong Kong SAR. IM<sup>2</sup>C in this Region is an inclusive and sharing platform for secondary schools to practice mathematical modeling in promotion of teaching and learning in STEM, at both local and international level by a student-centered approach.

The official website for IM<sup>2</sup>C is [www.immchallenge.org.hk](http://www.immchallenge.org.hk) (Greater China) and [www.immchallenge.org](http://www.immchallenge.org) (International)

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