

SIAM Activity Group Applied Mathematics Education Charter Renewal Application

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Applied Mathematics Education. The SIAM Activity Group (or SIAG/ED) to which this renewal applies was originally formed under the aegis of SIAM in July, 2014 by the SIAM Council and in July, 2014 by the SIAM Board of Trustees with its initial operating period beginning 7/31/14 and ending 12/31/16. Its charter has been renewed by the Council and Board four times thereafter.

This SIAG has 592 members, including 371 student members, as of December 31, 2021.

According to its Rules of Procedure, the objective(s) of the SIAG are:

It is the purpose of the SIAM Activity Group on Applied Mathematics Education to advance the development and practice of educational programs, courses and resources in applied mathematics interpreted as broadly as possible. This will include but not be limited to organizing conferences, maintaining a curated web-based repository of resources in modeling, computational and applied mathematics and mathematical sciences including the applications domains. The potential constituencies of the SIAG will include college faculty in fields represented by SIAM's membership: faculty with an interest in applied and computational mathematics; this includes members with primary interest in applications domains; mathematics teacher educators, especially for in-service professional development (since SIAM's involvement in pre-service teacher education is not extensive); and graduate students in applied mathematical areas with ambitions for careers in academia with a strong education component. Within the framework of SIAM, the SIAG will conduct activities that implement its purposes.

The SIAG on Applied Mathematics Education will organize activities in Educational Innovation, Practice, Improvement and Faculty development. The SIAG is expected to:

1. Organize minisymposia at the SIAM Annual Meeting in years where there is no SIAG conference.
2. At least once every five years either organize a track of at least six minisymposia at the SIAM Annual Meeting or have an activity group meeting held jointly with the annual meeting. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG chair.
3. Organize a biennial SIAM Conference on development and practice of educational programs, courses and resources in applied mathematics. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual meeting or other SIAG conferences. The chair of the conference organizing committee shall be either the program director or the chairperson of the SIAG or their designee.
4. With the approval of the SIAM Program Committee, the SIAG may organize special sessions at SIAM meetings, and conduct special one- or two-day meetings immediately before or after a regular SIAM meeting. Other SIAG meetings may be organized only with the approval of the SIAM president and vice president for programs. SIAG meetings, workshops, and conferences may be organized only with the approval of the SIAM president and the SIAM vice president for programs.

The SIAG has complemented SIAM's activities and supported its proposed functions. The answers to the questions below indicate how this was accomplished and what the officers propose as the future directions for the SIAG.

List all current officers of the activity group.

Chair: Emek Kose

Vice Chair: Haley Yaple

Program Director: Mario Banuelos

Secretary: Shelley Rohde Poole

1. *How is the field covered by the activity group doing? Is it growing, is the focus shifting? What have been the significant advances over the last two years?*

The field of applied mathematics education is gradually growing in general, with the increased attention to pedagogy and best teaching practices by new faculty in applied mathematics compared with their more traditional predecessors.

Over the last two years, all forms of education have been drastically impacted by the COVID-19 pandemic, and applied math education has not escaped unscathed. Many faculty have had to focus on learning remote tools and redesigning courses to reduce contact, perhaps at the expense of other pedagogical developments. We expect a resurgence in more specialized areas of interest to be imminent, as applied math educators are more able to devote time to improving their craft.

Another widespread focus for educators has been issues of diversity, equity, and inclusion, due at least in part to the murder of George Floyd and ensuing protests and activism nationwide. These events changed a lot of conversations happening in the classroom, including how discrimination and racism appear in applied mathematics community.

2. *How is the activity group doing? Is it remaining vibrant? Is the size of the SIAG stable or increasing? How is the SIAG keeping up with the changes in the field? How are the broader interests of SIAM reflected in the activities of the SIAG?*

The SIAG has somewhat decreased in size; from 684 in 2020 to 592 in 2021, due in large part to the COVID-19 pandemic. Our 2020 meeting was not postponed or rescheduled but canceled outright—it was to have been held jointly with the MAA's MathFest. Missing this event was a significant loss to our potential to grow as an activity group. Because so many of our members are graduate students, meetings are important for publicity. We had also hoped to increase our SIAG's membership via crossover from the MAA. Considering missing out on our biannual conference, which has always been one of the most effective ways to recruit new members, our SIAG membership still is strong.

An important focus has been building community and explicitly addressing issues of diversity, equity, and inclusion. This focus is highlighted in the 2022 meeting by both the keynote speakers and by the themes of building community in applied mathematics, engaging the public in applied mathematics, ethics in applied mathematics classrooms, mathematical modeling pedagogy and resources, and scholarship and research in applied mathematics education. Training the future applied and computational mathematicians is at the heart of this activity group, and the group's programming efforts reflect the continued importance of SIAM and its

members to solve future problems.

3. Please list conferences/workshops the activity group has sponsored or co-sponsored over the past two years and give a brief (one sentence or phrase) indication of the success or problems with each.

Our 2020 conference was canceled. We are preparing for our next meeting for this upcoming summer, to be held jointly with the SIAM Annual Meeting.

4. Please indicate the number of minisymposia directly organized by the activity group at the next planned SIAM annual meeting. When will the SIAG organize a track at an annual meeting or meet jointly with the SIAM Annual Meeting?

Because of the number of Activity Groups, the current guidelines are that an Activity Group should organize a track about every seven (7) Annual Meetings or meet jointly with the Annual Meeting within a seven (7) meeting period.

We are organizing our SIAG meeting to be held jointly with SIAM-AN 2022. There are 17 minisymposia sessions scheduled.

5. Please indicate other activities sponsored by the activity group, to include newsletters, prizes and web sites. Have each of these been active and successful?

The activity group posts a newsletter to its members to keep them up-to-date on activities in the SIAG. In the newsletter, we also share relevant articles and news in the communities, as well as upcoming events and deadlines. Communication with our group has been through SIAM Engage with 51 Discussions and 8 Library posts on topics such as undergraduate and graduate opportunities, career announcements, and relevant pedagogy resources.

6. What activities are planned and proposed for the next period of the charter? Please describe scheduled and suggested future activities in detail.

One of our goals has been to connect with other mathematical organizations and communities. For example, we are currently in conversation with NSF to brainstorm ideas for codifying best practices for computational mathematics in applied mathematics teaching. We also hope to revisit our previous connections with the MAA that were initiated as part of organizing ED20.

Our group has also been working on a Prize to be awarded to an early career applied mathematics educator which will soon be submitted for consideration. We also plan to explore SIAM Engage's other features to engage our membership.

In fall of 2022, we will start a brown bag lunch and a talk centering around topics that concern our members, such as classroom inclusion, applied mathematics topics for classroom projects, etc.

7. How can SIAM help the activity group achieve its goals?

The main area of support our activity group could use is to identify and implement additional strategies for outreach to and retention of a diverse membership, including more students, women, and people of color. Membership will also be particularly useful as many aspects of mathematics teaching are becoming more computational.

8. How can the activity group help SIAM in its general role of promoting applied mathematics education?

As SIAG ED, we have invited members of the mathematics education community to our conference this year, and we intend to increase our collaborations and communications with math education researchers and educators. To that end, we can help facilitate collaborations with that community. One topic we feel very important is strengthening the ties between educators and industry with the goal of keeping applied mathematics education current and able to respond to the demands of a rapidly changing technical workforce.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2023.

Signed,

Emek Kose, SIAG/ED Chair

May 19, 2022