

Volume V Number 5

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WELCOME TO SIMIODE AND OUR NEWSLETTER

SIMIODE - Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations is about offering a Community of Practice for teaching differential equations using modeling and technology upfront and throughout the learning process. Learn more at our dynamic website, www.simiode.org. SIMIODE is now entering its sixth year as a community, its second year of National Science Foundation funding, and the fifth year of this newsletter.

Please drop us an email to Director@simiode.org and let us know how we can improve SIMIODE and this Newsletter. Or if you have an idea for coverage you would like us to publish in the Newsletter then let us know or perhaps write up an "item" for our next issue. We would love to hear from you.

SIMIODE is a 501(c)3 nonprofit organization, based in Cornwall, New York in the United States.

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SCUDEM IV 2019 REGISTRATION THROUGH 25 OCTOBER 2019

SCUDEM IV 2019 will take place in local sites around the world on 9 November 2019. SCUDEM, which stands for SIMIODE Challenge Using Differential Equation Modeling, offers teams of three undergraduate or high school students three modeling problems. Each team selects the problem of their choice and works on it for a week before Challenge Saturday, 9 November 2019. Student teams with their coach travel to a local site (your school perhaps) near their home campus for a day of collegial sharing. Here they submit an Executive Summary for judging; work on an additional feature for their problem but do not redo their model; participate with faculty in an active use of SIMIODE Modeling Scenarios during a first portion of a Faculty Development program along with faculty; enjoy the fun of team MathBowl; make a 10 minute presentation of their model results and get immediate feedback on their work by faculty judges. Faculty dig deeper into pedagogical issues of modeling in a second portion of the workshop,

Currently SCUDEM IV 2019 has 70 local site host coordinators around the world, in Latin America, Europe, Asia, Africa, and United States.

Faculty coaches and other members of visiting faculty participate in a two part Faculty Development workshop in which they experience (with students) SIMIODE Modeling Scenarios and discuss using modeling in their differential equations course. During the closing ceremony awards (Outstanding, Meritorious, and Successful) are presented.

Team registration opens on 1 September 2019 and runs through 25 October 2019.

Be sure to check out the [convincing videos](#) in which students and faculty share their enthusiasm and experience in engaging in modeling with differential equations in SCUDEM events past.

There are no registration fees for SCUDEM IV 2019 in developing countries. This is our way of reaching out and supporting colleagues from these regions.

We invite all to join the [Facebook Group - SCUDEM Mathematical Community](#).

In our 12 July 2019 Blog we highlighted the results from a recently published article, "Building mathematics self-efficacy of STEM undergraduates through mathematical modelling," in the *International Journal of Mathematical Education in Science and Technology*, in which the authors conclude that SCUDEM increases students' self-efficacy in mathematical modeling. Do SCUDEM for your students!

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SIMIODE IS A COMMUNITY OF PRACTICE - FORUMS FOR CONVERSATIONS

We are pleased to announce that SIMIODE is a Community of Practice in the broad sense as defined by [Etienne and Beverly Wenger-Trayner](#). SIMIODE is more than a set of resources and ideas for using modeling to motivate and teach differential equations. SIMIODE is Community and welcomes conversations, blogs, forums, and exchanges about practices, examples, experiences, materials, stories, student feedback, successes and improvements, and much more. Join us at [SIMIODE Community of Practice](#) and engage in meaningful

conversations and exchanges. There are several places in SIMIODE in which we offer Forums on member interest topics. Once inside [Community of Practice](#) scroll down to Forums (Fora) for SIMIODE Members. Examples include [Use of Modeling Scenarios](#) and [Student Conversations about Modeling in Differential Equations Course](#). These and other Forums can be found in the [Forum Page](#) as well.

Also there may be forums found in your Groups, for example in the Teachers Group (our biggest group) we just added a Forum to other forums present called, "Modeling with Numerics" about fostering an exchange of ideas and experiences in using modeling to motivate numerical methods and programming for post calculus coursework, particularly differential equations. You can find Group defined Forums in your Dash Board once inside a Group of interest under Forum. Registered members can form a Group, invite members, and create their own Forums OR contact Director@simiode.org about forming a broader Forum for others to visit.

We have several ways to grow a Community of Practice. One way of doing so is introducing yourself to the community by making your profile rich in detail about your interests and background with use of tags and contact information. In SIMIODE one can search for colleagues by name or by interests using information you put on your Profile in the form of tags. We encourage folks to put themselves out there for others to find them and build connections. It could be a grad school buddy, a colleague from a former school, a person with the same advisor, a neighboring school associate, a friend, etc. When you make contact then pick up a conversation about uses of modeling in differential equations, the reason you are in SIMIODE!

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PUBLISH YOUR CLASS EFFORTS IN SIMIODE

If you are teaching differential equations of some sort you have probably written and assigned projects. Consider publishing your materials online in SIMIODE using our peer reviewed, double blind referee system.

SIMIODE maintains a [double-blind, peer-reviewed process](#) for quality online publication of Modeling Scenarios and Technique Narratives. However, we encourage authors to submit their ideas at any stage of development and/or class projects for immediate feedback of a less formal nature. We will render constructive support and encouragement as well as technical feedback. In the past the SIMIODE Director, Brian Winkel, as Founding Editor of the journal *PRIMUS*, found this to be a very good way to foster confidence, help prospective authors contribute to the broader community, and get their ideas published. Please drop us a note with your ideas and/or materials to Director@simiode.org. We will respond quickly!

You can see how to submit your materials [here](#). What you do is important to your students, but it is also worthy of sharing with colleagues and their students. Step up and write up your projects for SIMIODE. You will have an online refereed publication at SIMIODE. You will be pleased to know others are using your ideas, building on your success, and enjoying what you share with your students. So, what are you waiting for? Just do it!

One purpose of SIMIODE is to offer colleagues solid, refereed teaching material on which they can base a modeling first course in differential equations. Thus publishing new ideas and activities for students is a main goal of SIMIODE.

However, it is reasonable to ask yourself, "Why should I prepare, submit, and publish in SIMIODE?" [Here](#) we give you many good reasons to publish in SIMIODE. Check them out and see that many fit you. Then join us by sending us your efforts.

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COMMENTS HELP CREATE COMMUNITY AT SIMIODE

For each Resource posting in SIMIODE community members have the opportunity to post COMMENTS. This is strongly encouraged as it will build conversations which will connect colleagues, improve material, and foster community. Any posted Comment will be emailed to the author of that resource and conversations can then begin.

Giving feedback, reactions, and corrections to authors is very important for the individual author and the wider SIMIODE community. If you visit and scan/read or actually use a Modeling Scenario or Technique Narratives please offer comments. You may even wish to upload a new resource which has significant added-value. If so then contact Director@simiode.org to inquire how you can do this. We would welcome such efforts.

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NEW MODELING SCENARIOS PUBLISHED IN SIMIODE

Kurt Bryan, Rose-Hulman Institute of Technology, Terre Haute IN USA has just published a Technique Narrative on [Matrix Exponential](#) which would serve as excellent project for students wishing to learn about the development of e^{At} .

Jeff Pettit, Portland Community College, Portland OR USA, just published in SIMIODE a fine simulation to help understand and build a model for the [spread of information](#).

Rob Krueger, Concordia University, St. Paul MN USA and Eric Stachura, Kennesaw State University, Marietta GA USA teamed up to publish in SIMIODE a great difference equation modeling scenario on [Tiling a Hallway](#).

These are but a few of the many new publications in SIMIODE for you to use with your students. We invite you to search for topics of your interest and include SIMIODE materials in your teaching.

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SIMIODE SOURCES FOR YOUR OWN MODELING SCENARIOS

SIMIODE offers [potential modeling scenario ideas](#). There are hundreds of these! These are materials, thoughts, pointers, summaries, articles, etc. to encourage and support your modeling scenario ideas. You must be registered and signed in to view these resources. Consider these ideas and use them to design your own modeling scenarios for your students and then publish this material in SIMIODE.

Of course, you can publish your own source materials, perhaps ideas you have not been able to get to, but want to or wish to engage with others in producing a Modeling Scenario. Just upload them for all to see. Use the "Start a new Potential Scenario Idea" button and contribute.

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WORDS FROM THE DIRECTOR

SIMIODE is a **community** which is alive, vibrant, and rich in resources and individual talents to assist colleagues who wish to teach differential equations using modeling to motivate students. There are a number of ways you can add to the community:

Contribute materials. You can learn more about this at our [Author Information](#) section and get even more details once you have signed into SIMIODE. There you will find types of materials and instructions on how to contribute and begin the process leading to publication in SIMIODE.

Visit our [SIMIODE Blog](#) for thoughtful commentary or form your own blog.

Register to referee and review submitted materials. Good scholarship merits attention and our double-blind, peer-referee system affords quality reviews of submitted materials. Please, visit our [Manuscript Management system](#) and register as a referee.

Post slides from your presentations or talks. When you give a talk you can post your slides, details of the talk or meeting, and comments at [Resources: Presentations](#). Now that you have spread the word beyond the SIMIODE community bring it back home for your fellow SIMIODE members to see.

Attend a MAA Contributed Paper Session at MathFest or an AMS Special Session at JMM devoted to modeling in differential equations course work and see what others are doing. Step up after the talk and engage the speaker. You will have a new collegial friend!

Attend one of our [SIMIODE Workshops and Minicourses](#) at national mathematics meetings.

When you attend a talk on an application of differential equations encourage the presenter to consider sharing these ideas with the SIMIODE community. Encouragement helps young faculty expand their reach.

As always please let us hear from you with your concerns, your news, and your activities. Contact us at Director@SIMIODE.org.

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