

## Volume VII Number 3

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### **SIMIODE DIGITAL ONLINE TEXTBOOK - AVAILABLE NOW *DIFFERENTIAL EQUATIONS: A TOOLBOX FOR MODELING THE WORLD***

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The SIMIODE digital online textbook *Differential Equations: A Toolbox for Modeling The World* was published on 15 May 2021. This textbook has the traditional topics flow, but will be rooted throughout in modeling as a motivation and teaching approach with links to SIMIODE and other resources. This **low-cost \$39US textbook** is rich in modeling applications to introduce, motivate, and teach differential equations. Purchasers of the text will participate in support groups for **teacher** and **student** respectively. Access the Table of Contents and complete Chapter 1 preview [here](#).

Kurt Bryan, Rose-Hulman Institute of Technology, Terre Haute IN USA, is the author of this new SIMIODE digital, online, hyperlinked textbook which will bind rich modeling resources so faculty can teach a complete differential equations course motivated by modeling and students can save a bundle of money!

The textbook includes traditional exercises and solutions in addition to rich motivating modeling activities from SIMIODE and elsewhere. All other resources in SIMIODE will remain FREE as Open Educational Resources (OER) while this textbook will bring together the modeling approach SIMIODE supports, weaving together and binding the freely available SIMIODE resources. In addition, modeling activities, exercises, and projects, along with rich sections on dimensional analysis, parameter estimation and system identification, and control theory, point the way to applications beyond a differential equations course.

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### **SIMIODE COLLEGIAL WORKSHOP JULY 2021**

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- Day 1 - Wednesday, 7 July 2021, 1:30 - 4:00 PM Eastern US Time
- Day 2 - Tuesday, 13 July 2021, 1:30 - 4:00 PM Eastern US Time
- Day 3 - Monday, 19 July 2021, 1:30 - 4:30 PM Eastern US Time

These are the dates for our **FREE** SIMIODE Collegial Workshop this July. Complete schedule, details, and sign up information can be found [here](#). This workshop will introduce attendees to Modeling Scenarios for teaching differential equations with modeling from the vast array of SIMIODE materials. We will offer sample classes with attendees experience the "student life" and encourage reflection and discussion about use in the classroom. We have a good number of attendees already, from around the world, but we have room for more. Come join us!

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### **SIMIODE MIGRATION TO QUBES**

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SIMIODE, our Community of Practice, with all its resources, members, and features will be migrating to QUBES, specifically we are now laying the ground work for our **SIMIODE Community** within QUBES. We are migrating to benefit from higher level of engagement with other communities in QUBES and a richer sharing of resources. Further, QUBES offers many enhancements to the HUBzero platform on which SIMIODE currently exists and will manage the basic infrastructure so our technical staff can do more creative activities. We appreciate the support of Science Gateways Community Institute and HUBZero as well as applications of some of our National Science Foundation funds for this migration.

This move should be completed by the end of July 2021 and we will be asking for your patience as we "place the furniture" just right in our new home at QUBES. We will keep you informed and let you know how to access SIMIODE materials and update your membership.

**ADVISORY:** While we will move our resources and our members, we will not be moving individual Project materials that some members have in place, many being temporary

workshop development materials and scratchpad efforts. So, if you wish to save this material we ask you to download it all by mid July 2021.

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## MATHFEST 2021 SESSIONS ACTIVITIES

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SIMIODE will have a presence at MAA's virtual summer meeting, MathFest from 4-7 August 2021. Join us!

- SCUDEM - **International Student Challenge Gathering and Information**, Wednesday, 4 August 2021, 11:00 - 11:50 AM.
- Contributed Paper session with 16 presentations entitled **Modeling in Your Differential Equations Course - Just Do It**  
Part A: Thursday, 5 August, 11:00 - 11:55 AM  
Part B: Thursday, 5 August, 2:00 - 3:55 PM  
Part C: Friday, 6 August, 1:00 - 2:55 PM  
Part D: Saturday, 7 August 10:00 - 11:40 AM

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## CALL FOR SCUDEM VI 2021 JUDGES

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Registration for SCUDEM VI 2021 will be from 1 September - 15 October 2021 with the student group Challenge Period to work on one model of team choice from 23 October - 15 November 2021 from email. See **complete results from SCUDEM V 2020**.

We are seeking volunteer judges to view 4 of the 10-minute student produced videos on one of three problems. Last year there were 95 faculty and industry coaches, 502 students, and 380 judges from around the world engaged in SCUDEM V 2020. Many coaches elected to judge more than the requested number of videos and as a result each team received on average more than 8 judge's feedback reports.

The 27 Outstanding Award videos can be seen at our SIMIODE **YouTube Channel**. It is a great opportunity to see creative student work and be part of worldwide student growth through feedback on their work. If you are interested in serving as a judge, please write to [Director@simiode.org](mailto:Director@simiode.org) and indicate your interest or ask questions about the opportunity.

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## MODELING SCENARIOS COMING FROM SUMMER 2021 DEMARC WORKSHOP

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During the month of June on Tuesdays SIMIODE is conducting our DEMARC Workshop in which 21 colleagues are developing and writing Modeling Scenarios for publication in SIMIODE. After suitable double-blind review and editing these will appear as new publications in SIMIODE. So, look for them to begin to appear in August 2021 upon review completion. We have some terrific applications of differential equations in production so you can employ them with students.

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## JMM 2022 AMS SPECIAL SESSION AND WORKSHOP COMING DETAILS

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The Joint Mathematics Meetings (JMM) 5-8 January 2022 will see several SIMIODE related events:

- SCUDEM - **International Student Challenge Gathering and Information**.
- AMS Special Session, "Weave reality into your differential equations course," will be offered on Thursday, 6 January 2022, 8:00 - 11:50 AM and 1:00 - 4:50 PM. Abstracts will be accepted in July 2021.
- Two day, four hour workshop, "Differential Equations: A Toolbox for Modeling the World in Your Classroom with Your Students."
- SIMIODE NSF Workshops Gathering Meeting - To be determined.
- SCUDEM Gathering and Information Session - To be determined.

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## SIMIODE EXPO 2022 INTERNATIONAL VIRTUAL CONFERENCE

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SIMIODE offered a successful and rich virtual conference, **SIMIODE EXPO 2021, 12-13 February 2021**, with keynote speakers, minicourses, contributed paper sessions, panels, career presentations for students, talks on art and mathematics, poster sessions, fun MathBowl, and more for faculty AND students. We offer the Slides and Videos from each of these interesting presentations. Visit the **conference site**, select a talk you would like to attend, click on Video to watch the talk or Slide to view the presentation slides. Enjoy!

Hundreds of colleagues from around the world attended this intimate, content packed conference, focused on teaching differential equations with modeling, and MUCH MORE!

We are planning SIMIODE EXPO 2022, 11-12 February 2022 so check out **last year's program** and consider how you will engage in SIMIODE EXPO 2022.

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## PUBLISH YOUR CLASS EFFORTS IN SIMIODE

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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. More and more colleagues are accepting our invitation for sharing and publishing their teaching materials in SIMIODE for others to enjoy. Join in with us!

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](mailto: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 your new ideas and activities for students is a main objective of SIMIODE so others can see your fine work and engage their own students in similar manner. 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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## CONTRIBUTE TO SUPPORT OF SIMIODE

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SIMIODE is a 501(c)3 US IRS non-profit organization and depends upon individual contributions and foundation support. If you believe in our work and would like to contribute financial support in whatever amount is comfortable for you please, please do so through our [Donate Button](#). You will receive a formal receipt and a personal letter of appreciation from us. We will also list you in our List of [Contributors and Supporters](#). Thank you.

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## WORDS FROM THE DIRECTOR

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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 several 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. Register to referee and review submitted materials. Good scholarship merits attention and our double-blind, peer-referee system affords quality reviews of submitted materials.

**Post slides from your presentations, classes, 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. As always please let us hear from you with your concerns, your news, and your activities. Contact us at [Director@SIMIODE.org](mailto:Director@SIMIODE.org).

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