

Volume VII Numbers 5 and 6

TABLE OF CONTENTS

- **Personal Note and SIMIODE Headquarters Moving**
- **Successful SCUDEM VI 2021 Wraps Up**
- **Exciting International Online SIMIODE EXPO 2022 Conference**
- **SIMODE Migration to QUBES Hub - A Work in Progress**
- **SIMIODE OnLine Digital Text - *Differential Equations: A Toolbox For Modeling The World***
- **New Modeling Scenarios Published in SIMIODE**
- **Publish Your Class Efforts in SIMIODE**
- **Contribute in Support of SIMIODE**
- **Words from the Director**

PERSONAL NOTE AND SIMIODE HEADQUARTERS MOVING

After living in Cornwall NY for 26 years and teaching at the United States Military Academy, West Point NY USA, for most of that time the Director, Brian Winkel, and his wife are moving to Chardon OH USA. This fall has been a very hectic one, with house selling and house buying, with downsizing and packing, with getting "real" about saying goodbye to our special little village and readying ourselves for the very serene life in the country on a quiet lane with a pond. With this we also move our SIMIODE operations, files, materials, and history since 2013. But we stay in touch through the world of the web.

It has been a hectic few months of planning, but we are looking forward to settling in during January 2022 - New Year and New Home, and re-establishing a steadier pace.

[Return to Table of Contents](#)

SUCCESSFUL SCUDEM VI 2021 WRAPS UP

We have completed SCUDEM VI 2021 and posted a Report on results, while waiting for all 26 Outstanding Teams to share their videos so we can bring them to you at our [SIMIODE YouTube Channel](#) along with our SCUDEM V 2020 Outstanding Team videos.

[Return to Table of Contents](#)

EXCITING INTERNATIONAL ONLINE SIMIODE EXPO 2022 CONFERENCE

We are planning our International Online Conference, SIMIODE EXPO 2022, from 10-13 February 2022 and we encourage you to take a look, to Register for EXPO 2022, and to submit a session idea and/or talk presentation to us at Director@simiode.org. This year's conference has expanded from EXPO 2021's two day gathering to a four day full and rich conference gathering from 1:00 PM - 10:00 PM Eastern US Time each day, with time for informal meetings, small discussions, themed gatherings, four keynotes, MathBowl and Math Escape Room, themed presentations, professional sharings, workshops, poster sessions, career path gatherings for students and faculty, and very personal, immediate conversations through instant ZOOM meetings with friends you see at the conference as well as the possibility of organizing breakout sessions of interest to you and colleagues with more structured breakout sessions offered by the conference.

[Return to Table of Contents](#)

SIMODE MIGRATION TO QUBES HUB - A WORK IN PROGRESS

SIMIODE will be migrating its entire Community of Practice, including thousands of members, hundreds of resources, and many other features, to the rich HUBZero environment of SIMIODE in QUBES Hub. This is taking much more time and effort than originally planned, but with the assistance of Science Gateways Community Institute - SGCI and HUBZero resources helping our own technical staff at SIMIODE we are working very hard to make this happen completely by Spring 2022.

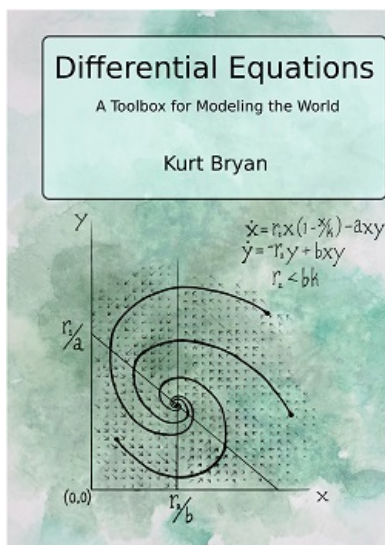
Meanwhile, we will continue to straddle our established web SIMIODE Community of Practice while populating our new home at QUBES Hub.

Before the final step in the migration we will inform all SIMIODE Community members of the move and share with them exact information and procedures to gain their place in our new SuperGroup in QUBES, principally to register at the site we share with you.

In advance, we apologize as we figure out how to reshape and take advantage of our local surroundings in QUBES to benefit from the many rich, interactive, and social capabilities which motivated this migration. We will keep you posted.

[Return to Table of Contents](#)

SIMIODE ONLINE DIGITAL TEXT *DIFFERENTIAL EQUATIONS: A TOOLBOX FOR MODELING THE WORLD*



SIMIODE offers its digital online textbook, *Differential Equations: A Toolbox for Modeling the World*. The online low cost textbook is available for purchase through SIMIODE for \$39US.

Authored by the distinguished teacher and writer, Dr. Kurt Bryan, Rose-Hulman Institute of Technology, Terre Haute IN USA, this text takes a modeling first and throughout approach to motivate the study and learning of differential equations in the spirit of SIMIODE, while linking to many SIMIODE Modeling Scenarios and other original activities.

Here we offer a copy of the [Table of Contents](#) and [Chapter 1](#) to demonstrate our commitment to a modeling first and throughout approach in teaching differential equations.

The text offers some 600 pages of rich modeling motivated materials with support groups in SIMIODE for Students and Teachers with some 400 additional pages of materials to help teacher and student at [SIMIODE](#)

[Textbook - Teacher Group](#) or a [SIMIODE Textbook - Student Group](#).

Differential Equations: A Toolbox for Modeling the World puts applications and modeling front and center in an introduction to ordinary differential equations. In taking this approach we do not skimp on or skip over the mathematics, but use applications to motivate both subject and technique. The mathematics presented is interwoven with modeling to drive both the mathematics and understanding of the application under study and to make the case that differential equations provide a powerful, indispensable toolbox for describing the world.

Dr. Glenn Ledder, University of Nebraska, Lincoln NE USA, says in his forthcoming review in *The UMAP Journal*, "This book is the only one this reviewer is aware of that presents differential equations in a modeling context rather than merely adding a bit of modeling to the standard presentation. If you want to study the mathematics of differential equations in a modeling context, you are in the right place."

We also present some unconventional, but important topics not usually offered in introductory texts: dimensional analysis, parameter estimation, a brief introduction to control theory via Laplace transforms, nondimensionalizing and scaling of differential equations, and a more thorough treatment of electrical circuits. The text includes numerous exercises, including inline "Reading Exercises," as well as a section of more extensive modeling projects at the end of each chapter, many based on published SIMIODE projects, and many new activities. Several projects include data sets for experimentation and model validation.

Purchasers of this text will be invited to engage in a [SIMIODE Textbook - Teacher Group](#) or a [SIMIODE Textbook - Student Group](#) in which all the resources appropriate to the respective interests of the group will be provided: solutions, hints, project ideas, data, computer code, forums, collaborative project space, etc.

Again, [purchase this textbook](#), support SIMIODE, enjoy the read, and adopt the text for your course on behalf of your students.

[Return to Table of Contents](#)

NEW MODELING SCENARIOS IN SIMIODE

During the summer of 2021 NSF sponsored DEMARC, Developer Workshop, from which some 25 submissions from participants were submitted. Here are a few listed for your consideration.

- Brody Dylan Johnson and Elodie Pozzi, Saint Louis University, Saint Louis MO USA, shows how population models can be used to examine social issues in the changing percentage of engineering degrees awarded to women in the United States.
- Allison Leigh Lewis, Lafayette College, Easton PA USA, guides a student familiar with single ordinary differential equation (ODE) models towards the development of a more complex system of two ODEs for describing the evolution of tumor growth over time.
- Barbara Zubik-Kowal, Boise State University, Boise ID USA, studies the dynamics of chlorine concentration during regular swimming pool maintenance cycles.
- Chiu Choi, University of North Florida, Jacksonville FL USA, walks students through establishing a mathematical model for an electric circuit as a second-order ordinary differential equation with constant coefficients.
- Brody Dylan Johnson, Saint Louis University, Saint Louis MO USA, guides students through the development of an empirical model for the velocity and distance traveled of a simple pull-back toy.
- Maila Hallare, Norfolk State University, Norfolk VA USA and Charles Lamb, Indiana University of Pennsylvania, Indiana PA USA, recently contributed a detailed and fascinating history and model for the spread of flush toilet technology.

These are but a few of the many 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.

[Return to Table of Contents](#)

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. 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. 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.

[Return to Table of Contents](#)

CONTRIBUTE IN SUPPORT OF SIMIODEE

SIMIODE is a 501(c)3 US IRS non-profit organization and accepts 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 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.

[Return to Table of Contents](#)

WORDS FROM THE DIRECTOR

SIMIODE is a **Community of Practice** 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. We list two here.

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.

[Return to Table of Contents](#)

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